

"FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
PULSE ECHO ULTRASONIC IMAGING"

Applicant: Ted Christopher

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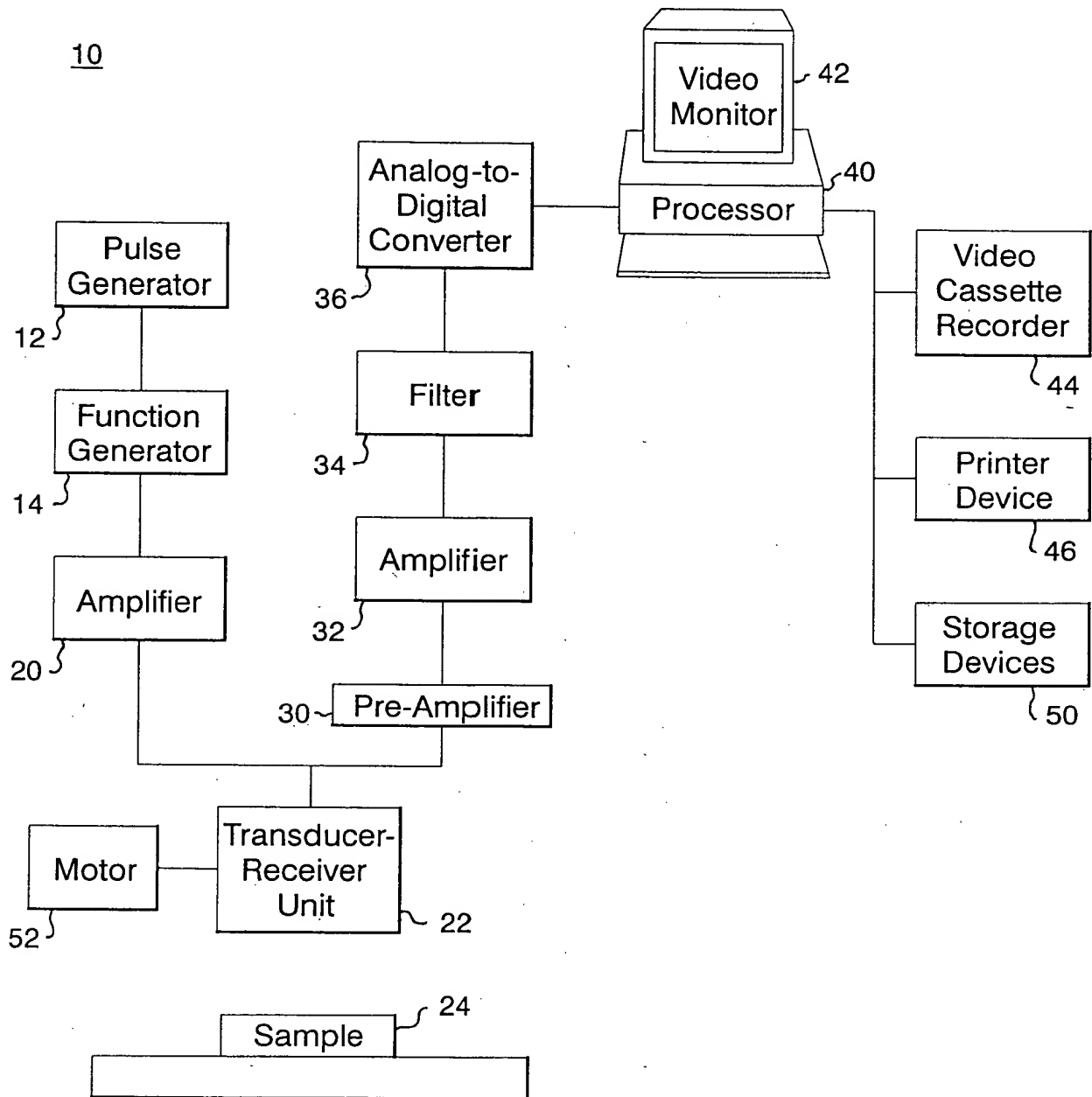
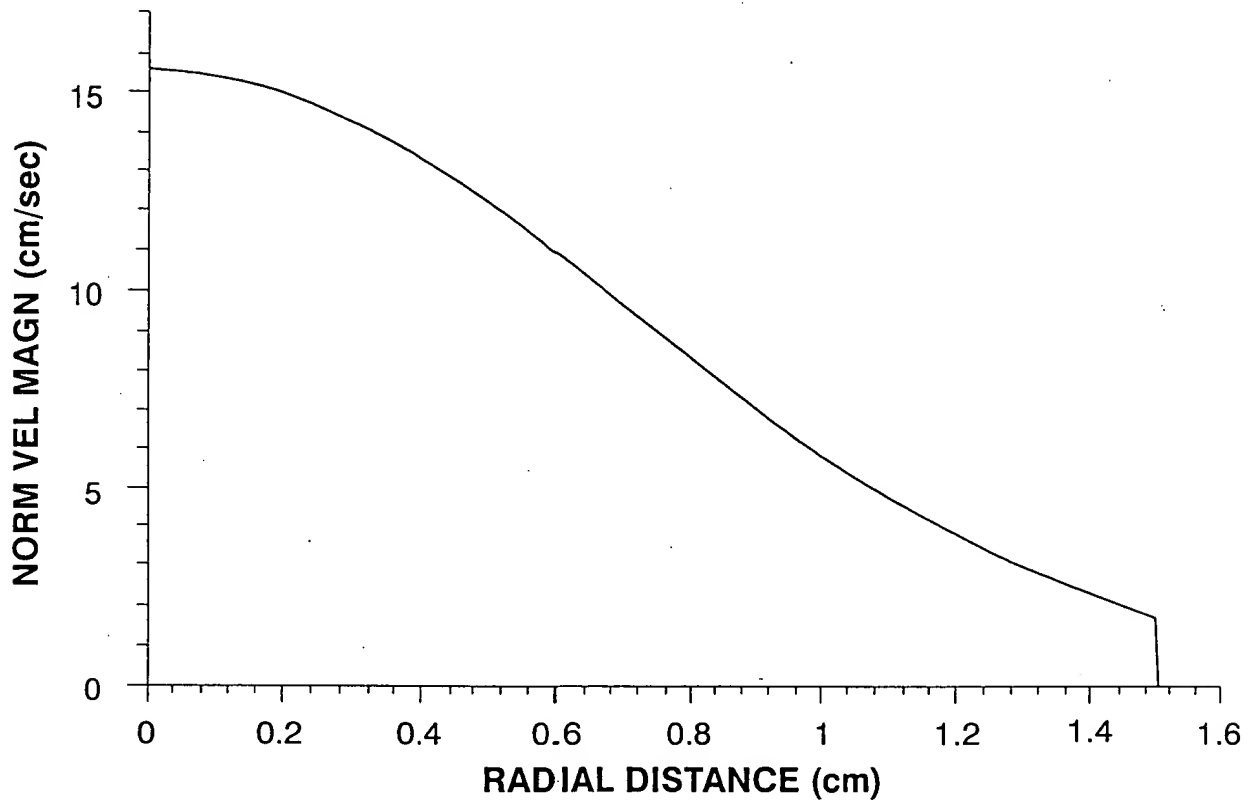


Figure 1

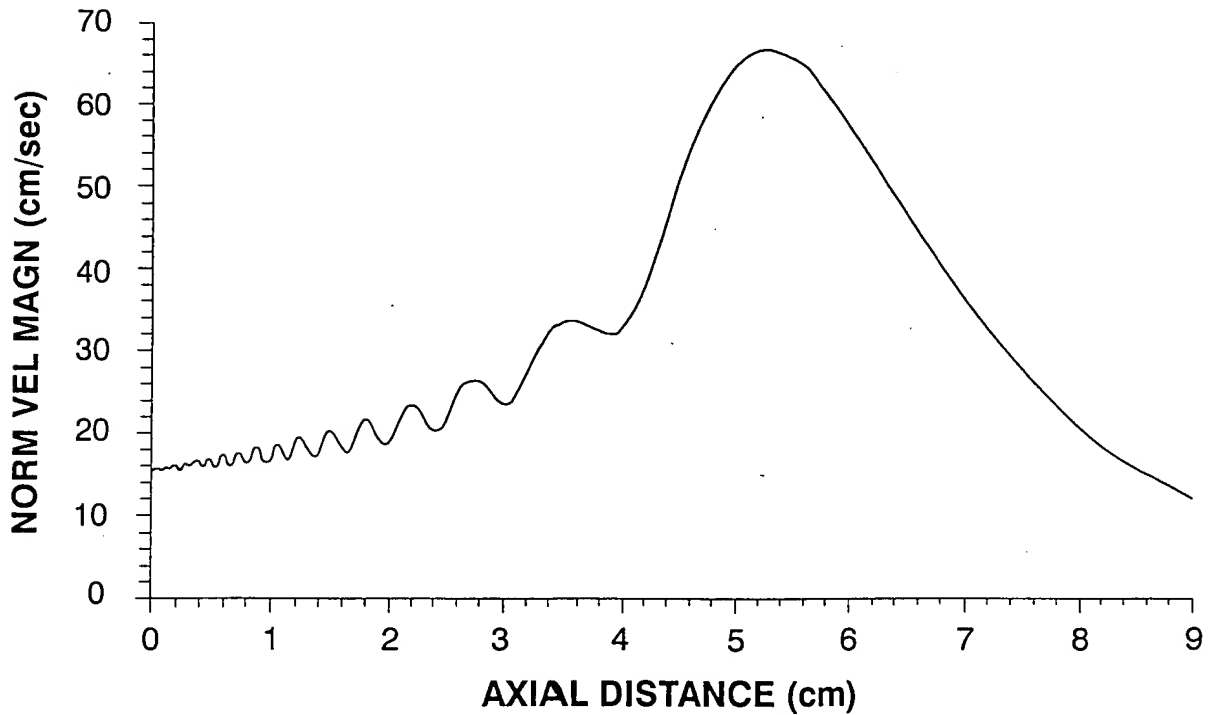
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**Figure 2a**



**Figure 2b**

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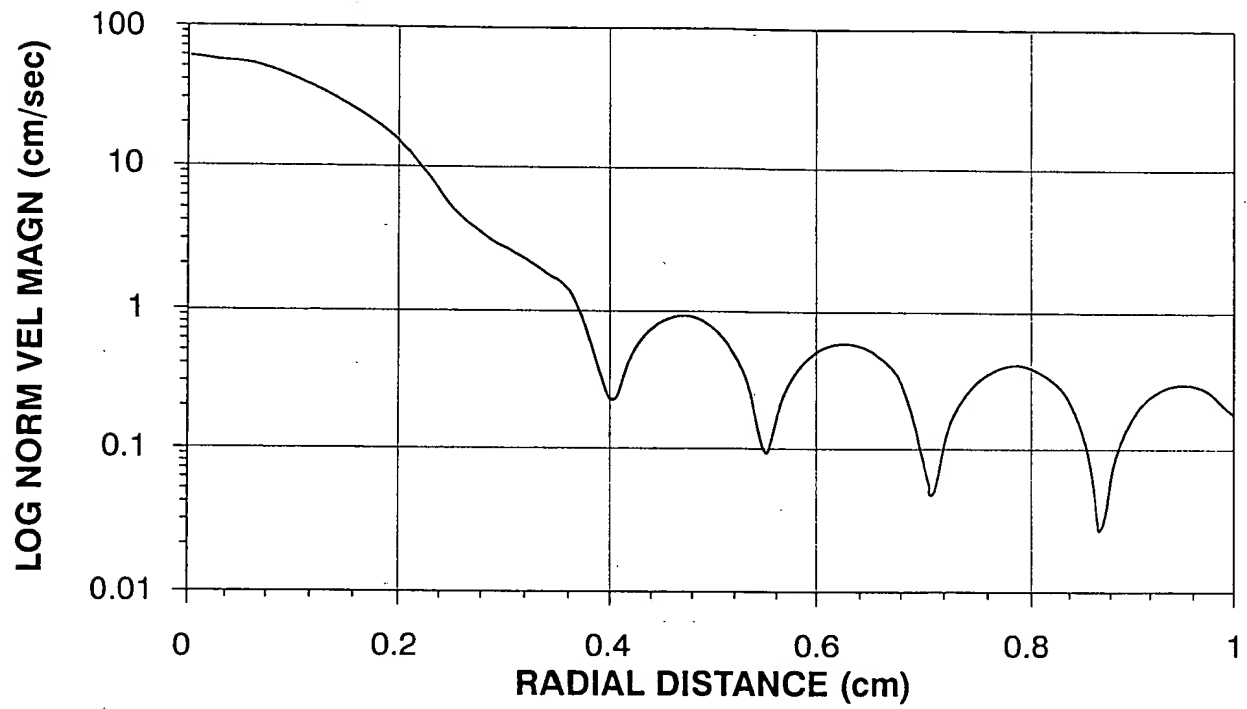


Figure 2c

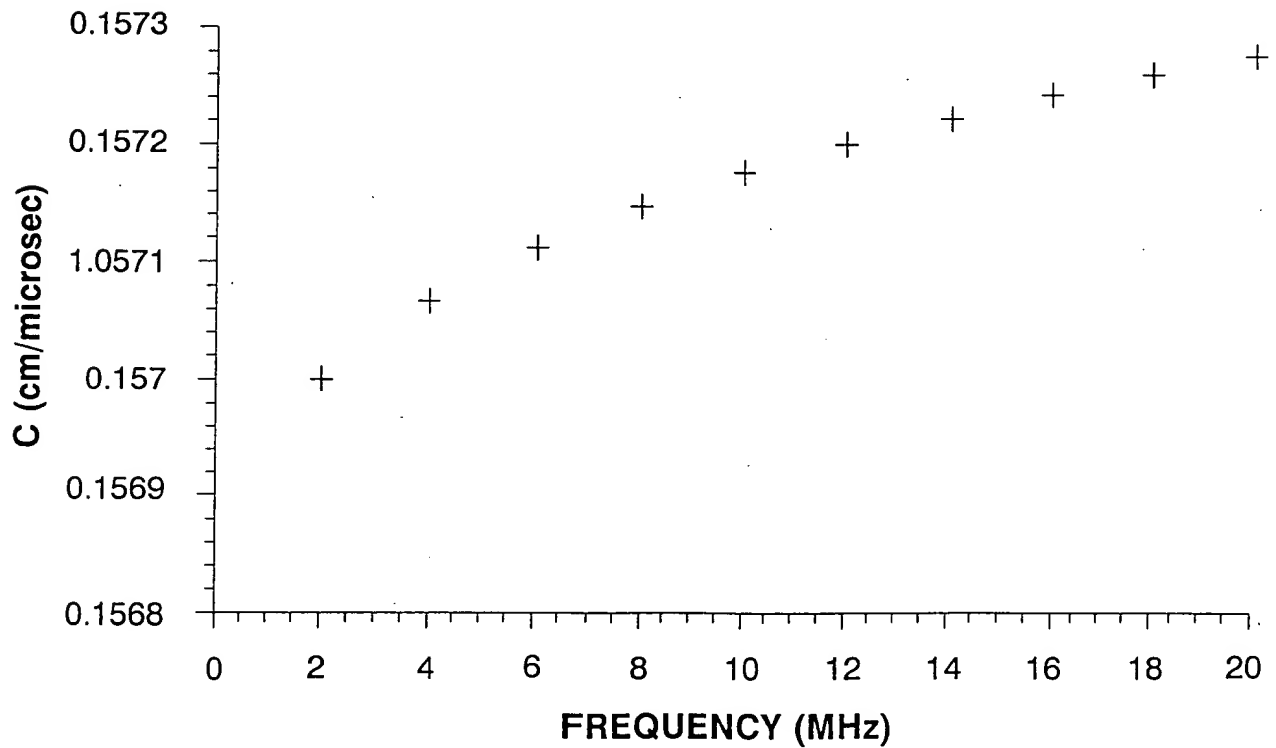


Figure 3

“FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
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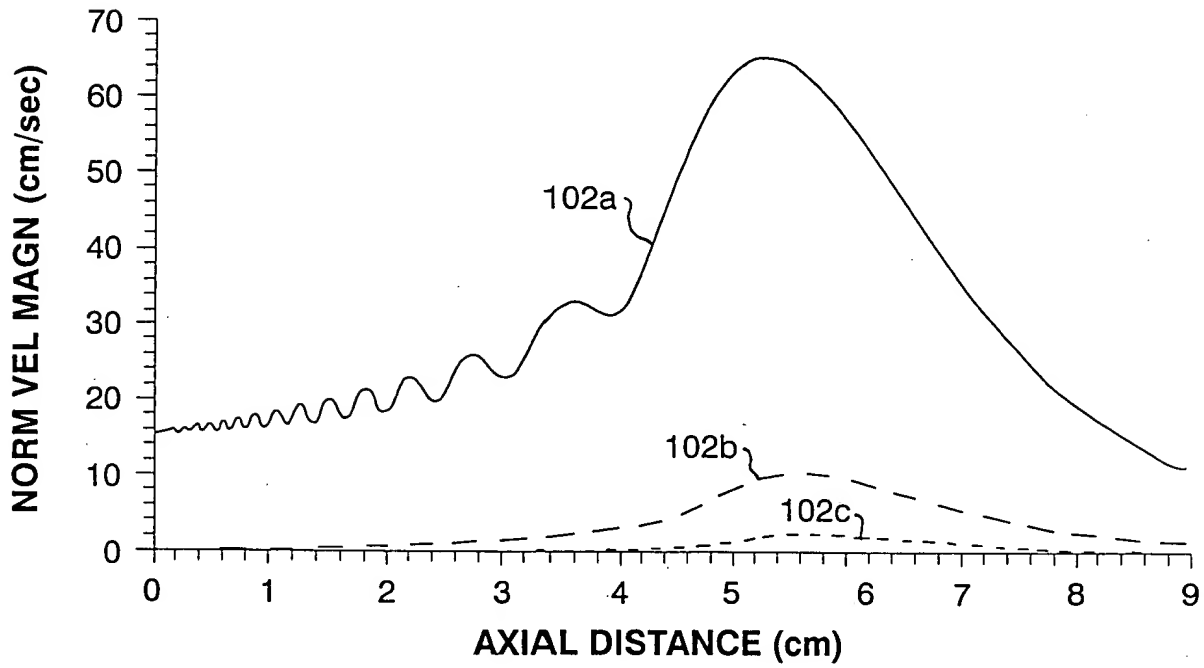


Figure 4a

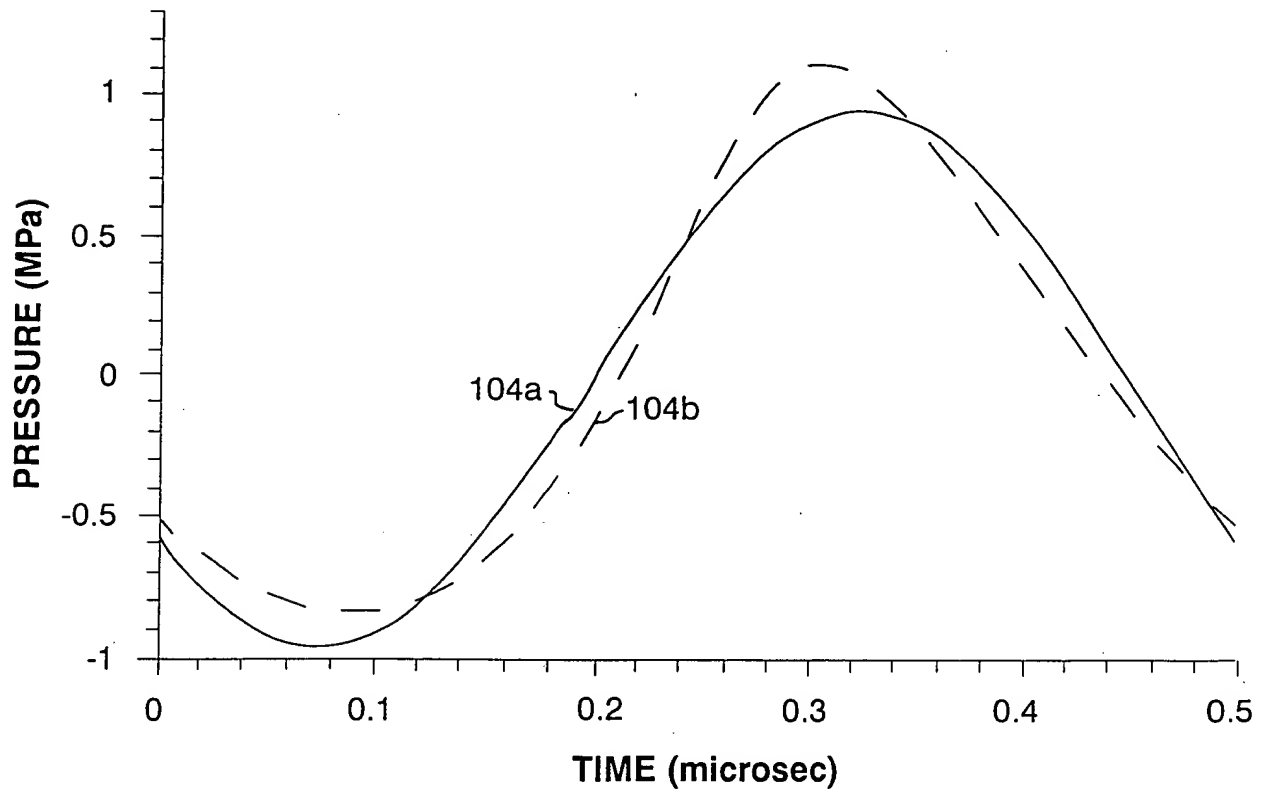
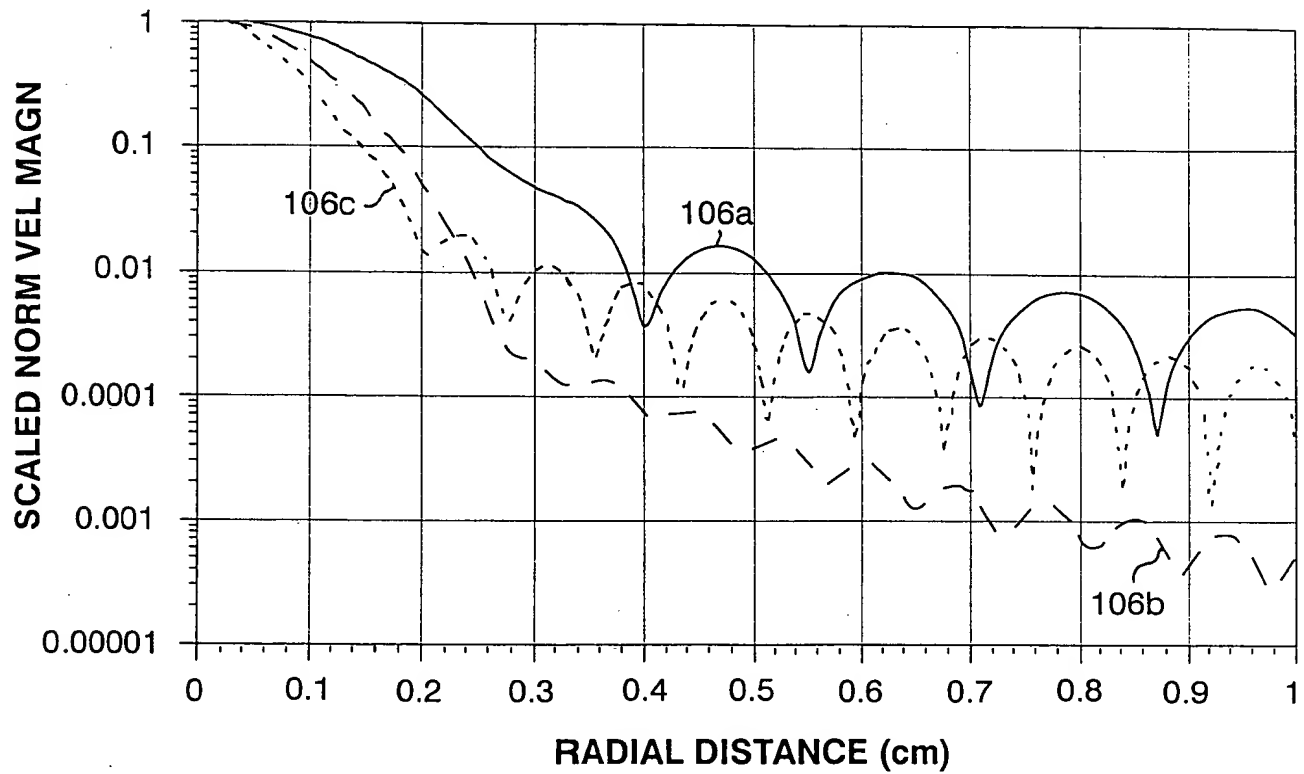


Figure 4b

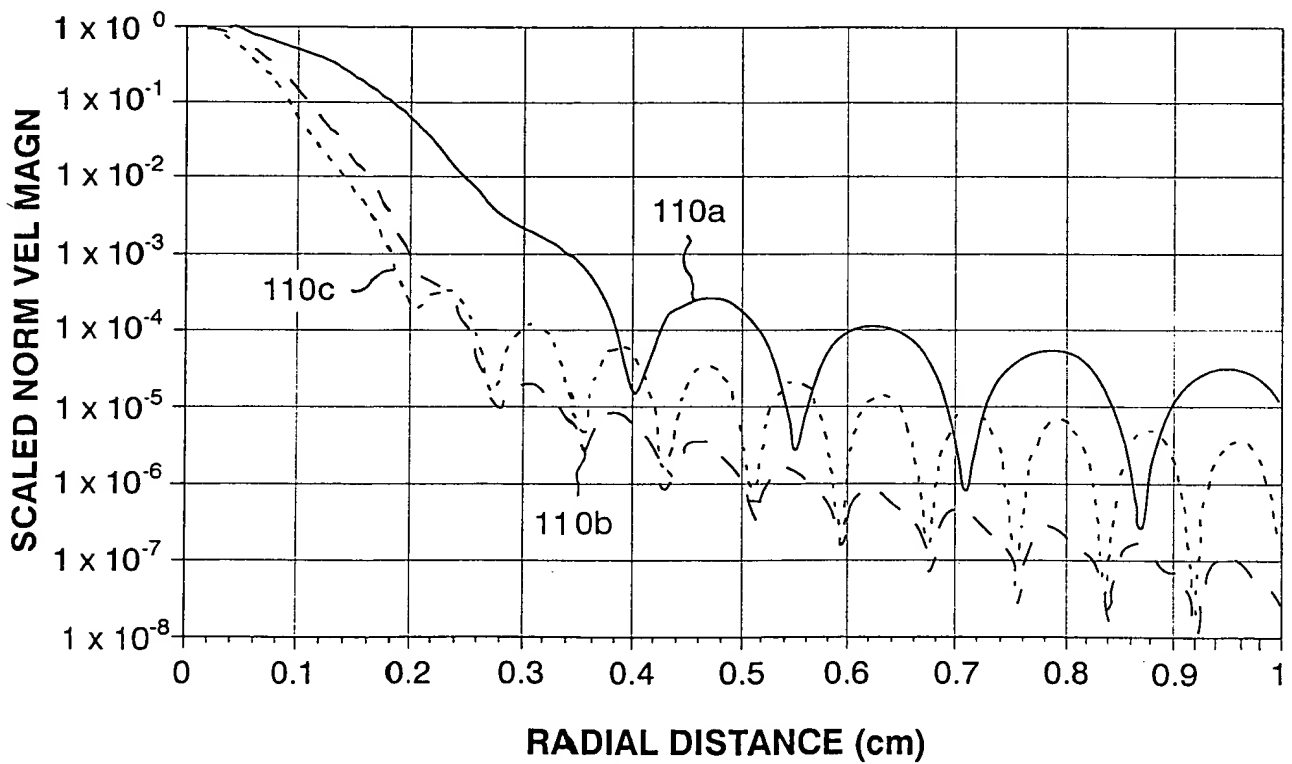
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**Figure 5a**



**Figure 5b**

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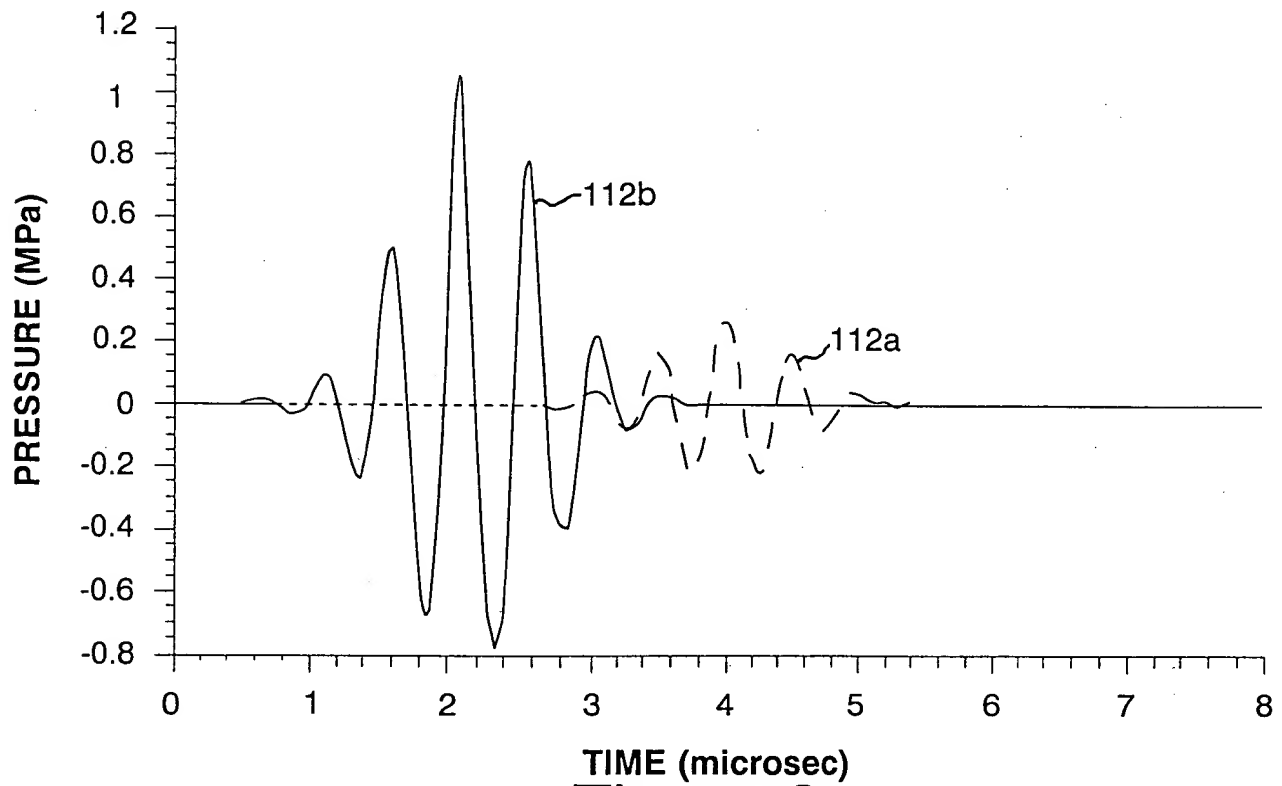


Figure 6a

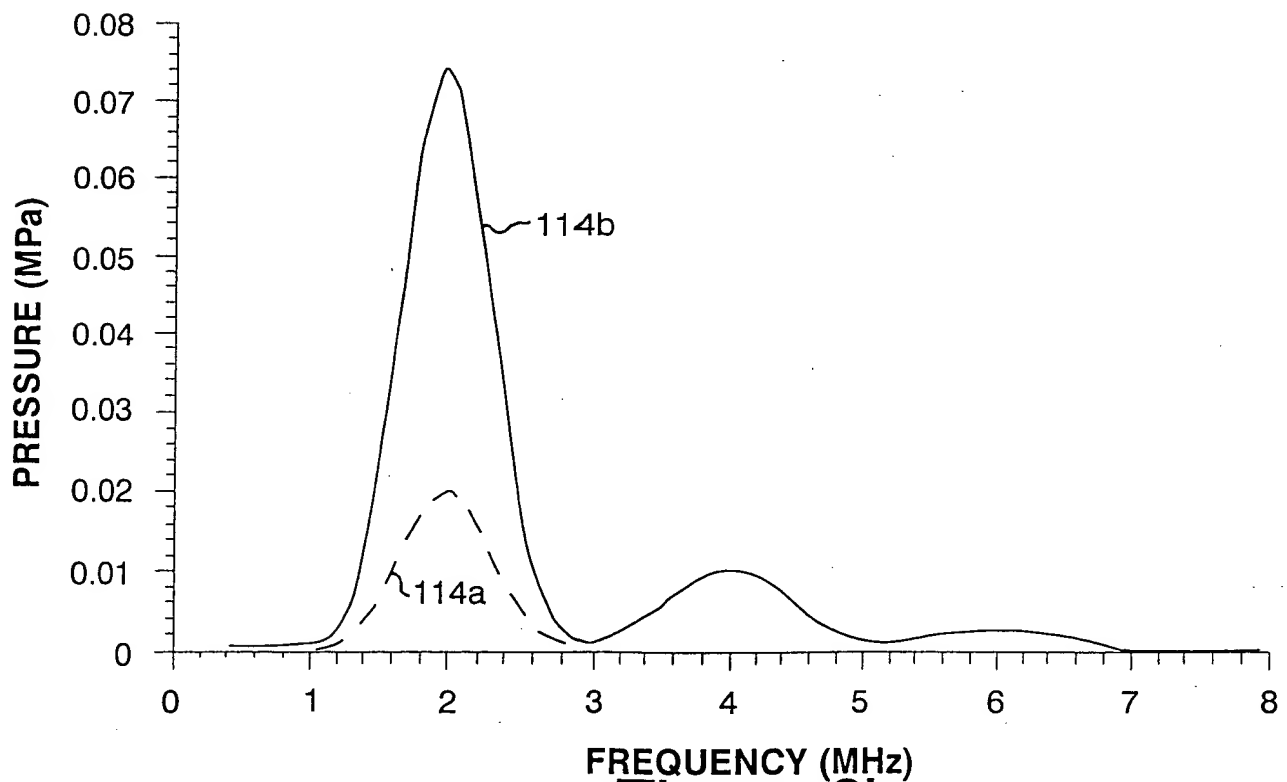


Figure 6b

“FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
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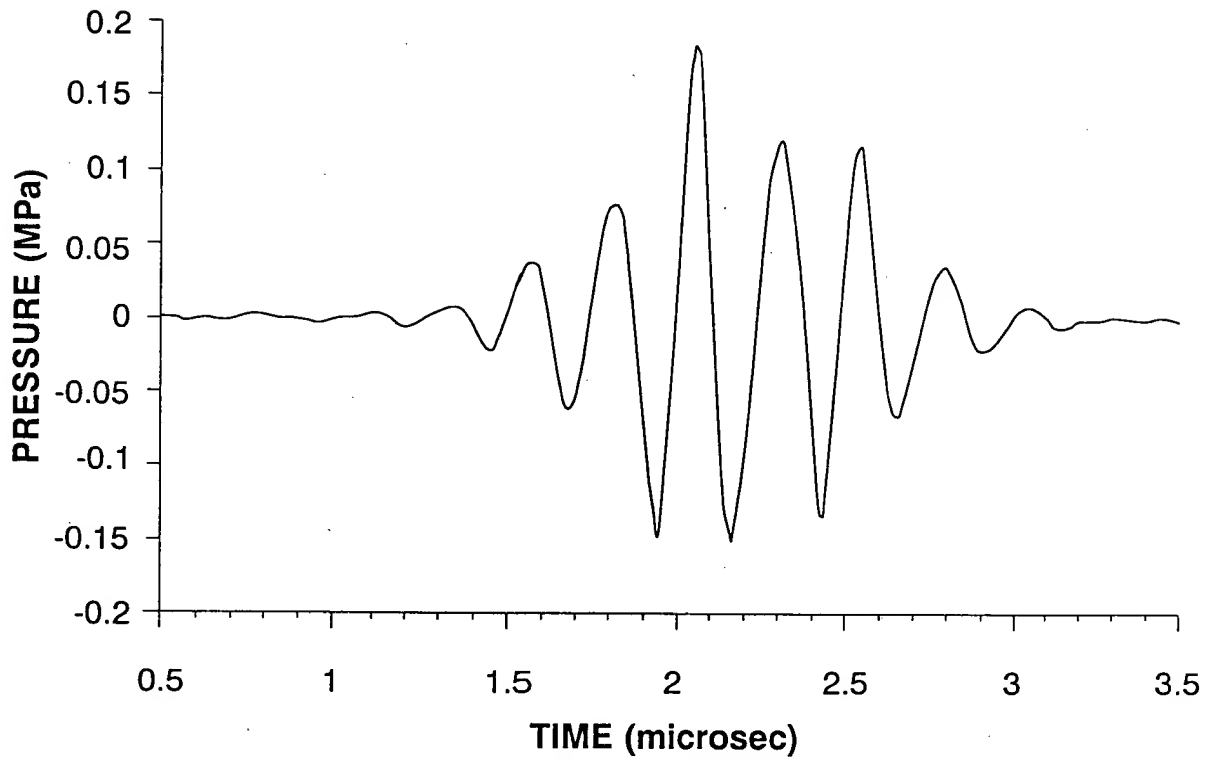


Figure 6c

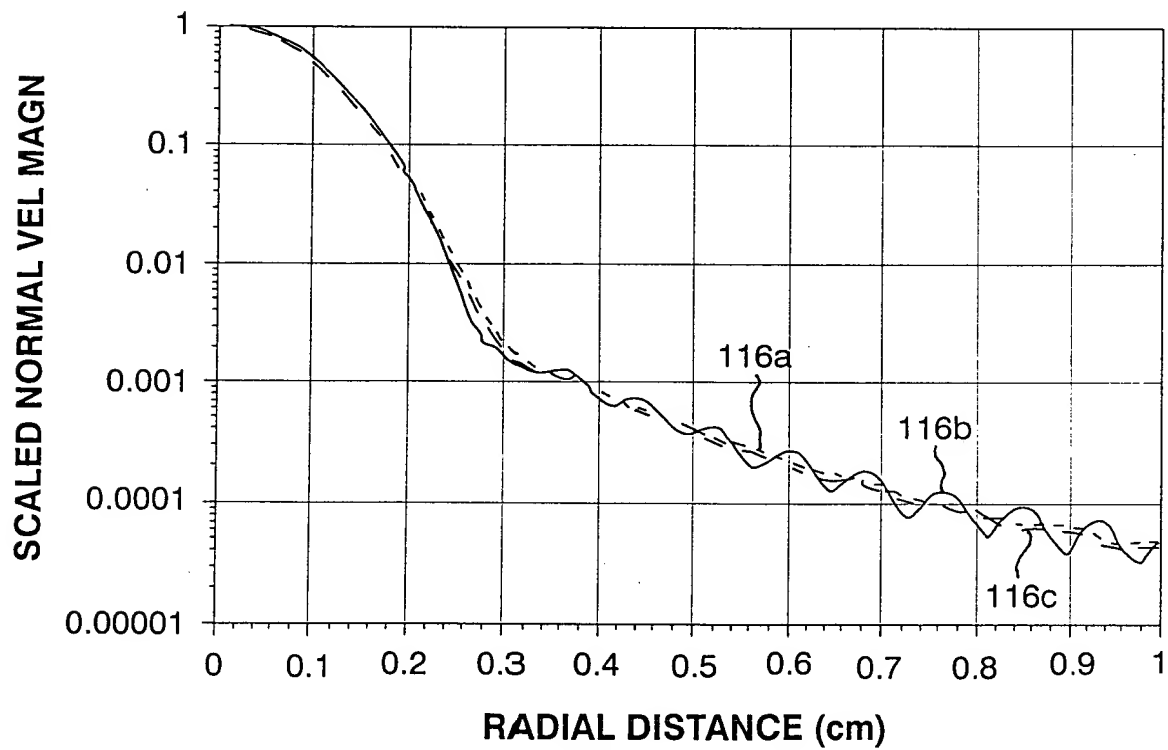


Figure 7

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On-axis Source intensity (RMS w/cm <sup>2</sup> )	Received 2 <sup>nd</sup> harmonic level (dB)	Received 3 <sup>rd</sup> harmonic level (dB)	Minimum pressure at the geometric focus (Mpa)	Mechanical Index (min. press.sqrt(f))
0.5	26.54	50.88	-0.45	0.32
1	23.64	45.02	-0.61	0.43
2	20.73	39.23	-0.84	0.59
4	17.94	33.66	-1.13	0.80
8	15.37	28.59	-1.50	1.06

**Figure 8**

Focal length (cm)	2 <sup>nd</sup> harmonic level at the focus (dB)	Received 2 <sup>nd</sup> harmonic level (dB)
4	15.99	19.75
6	15.11	20.73
8	15.01	22.53
10	15.29	24.69
12	15.83	27.07

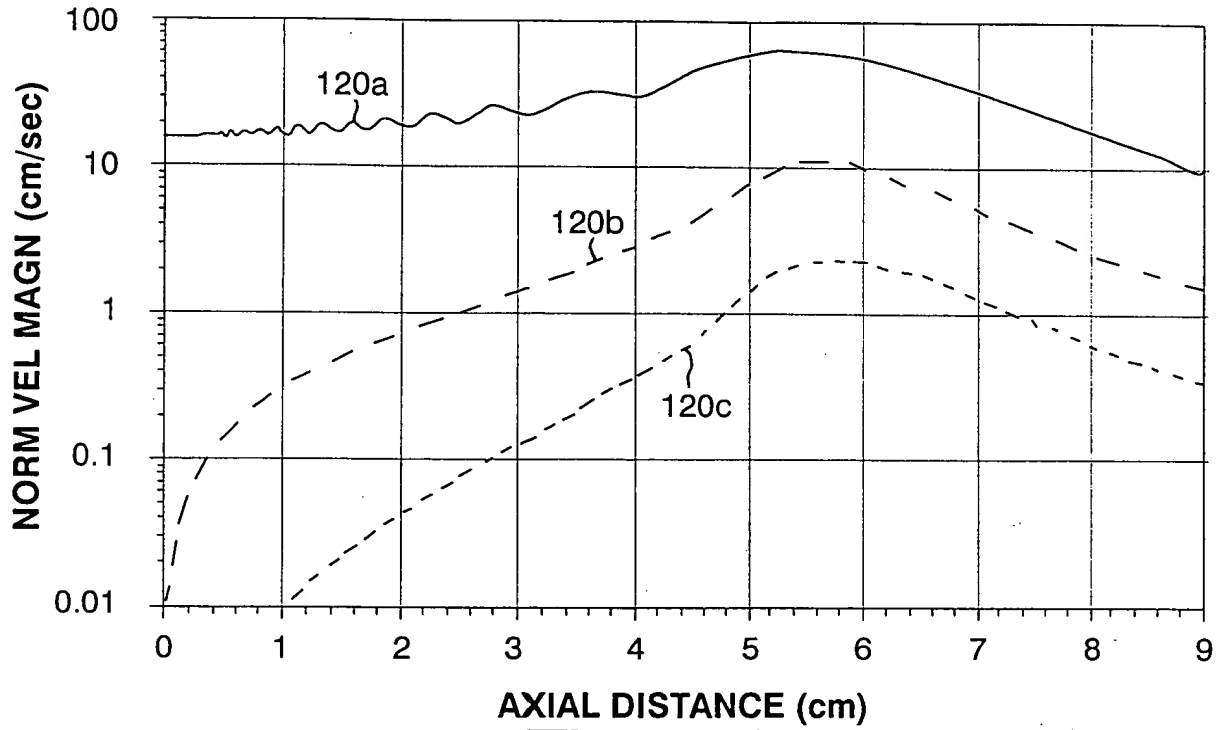
**Figure 9**



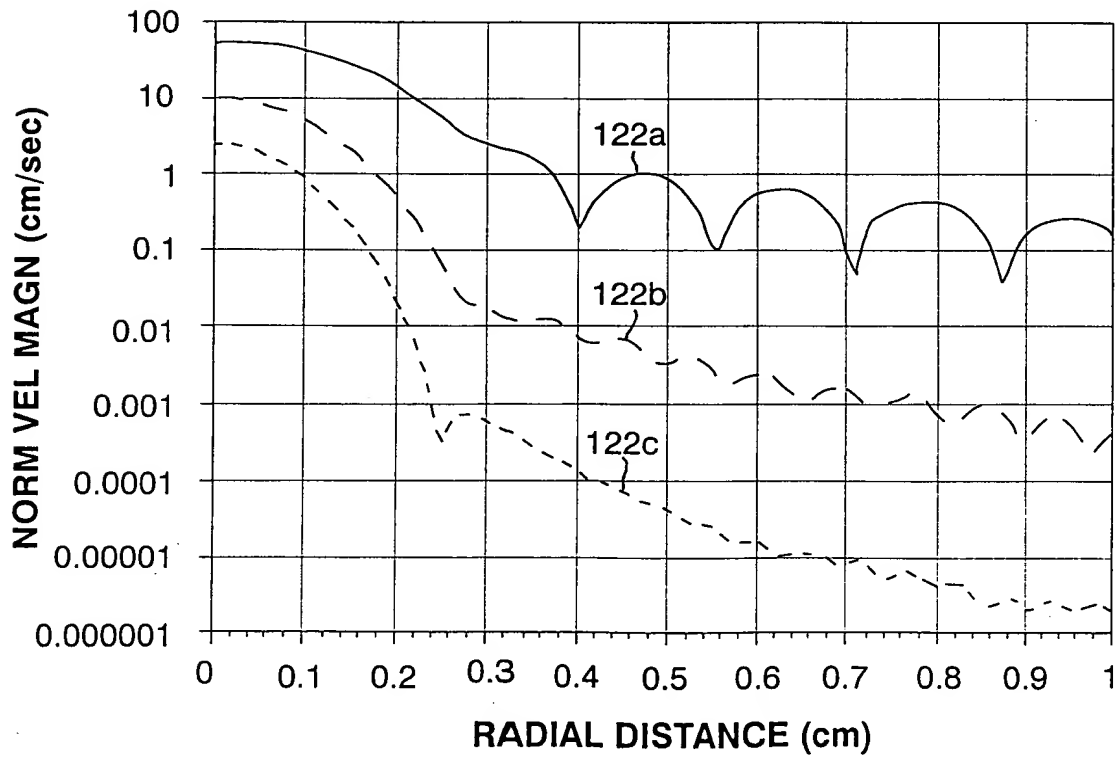
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**Figure 10a**

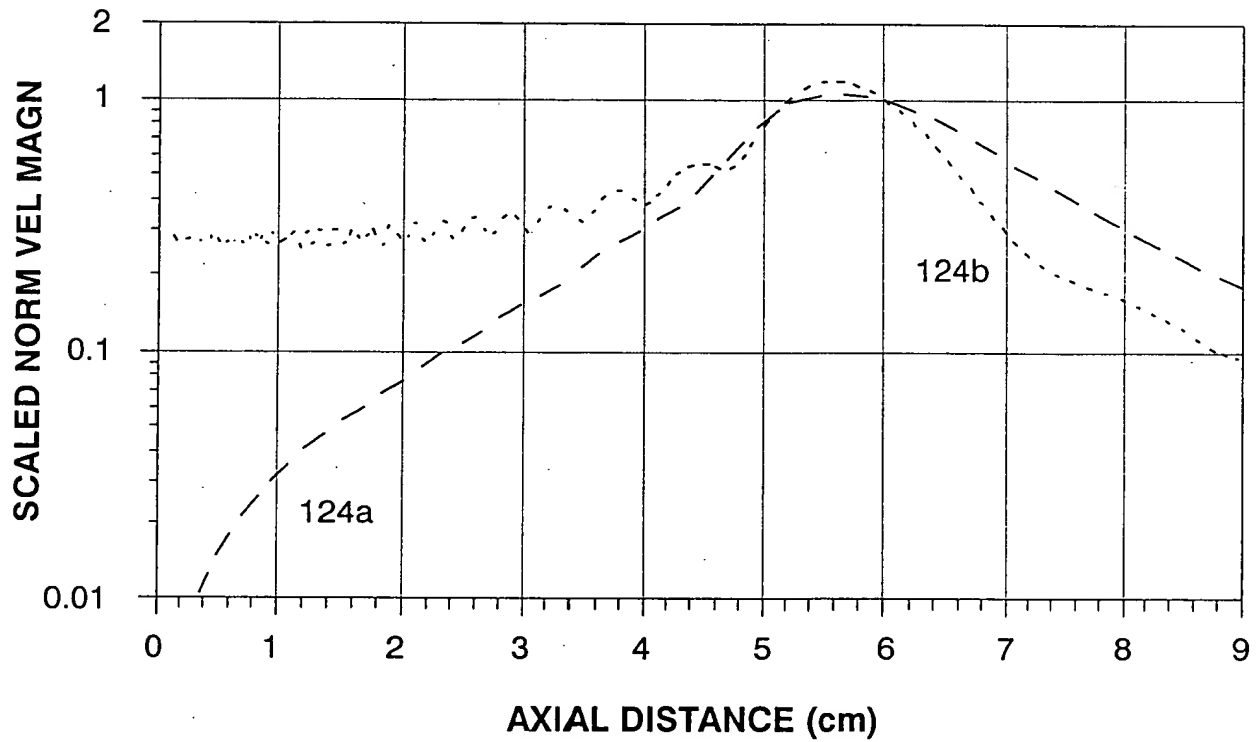


**Figure 10b**

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**Figure 11**

“FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
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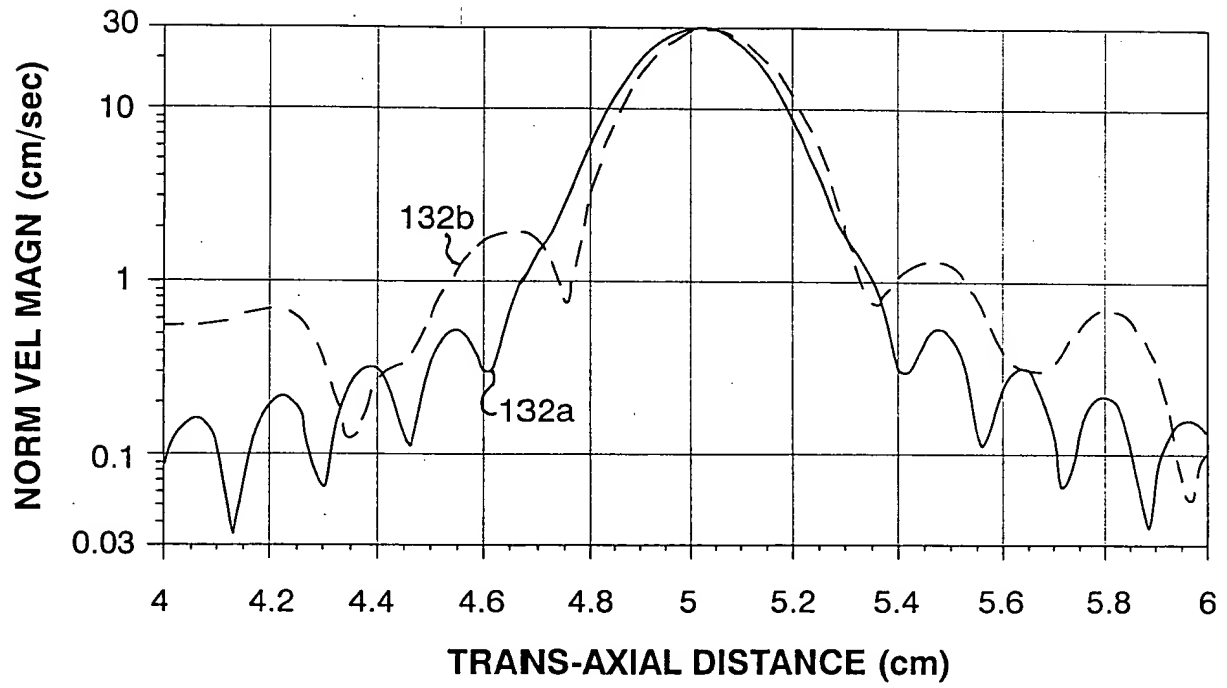


Figure 12a

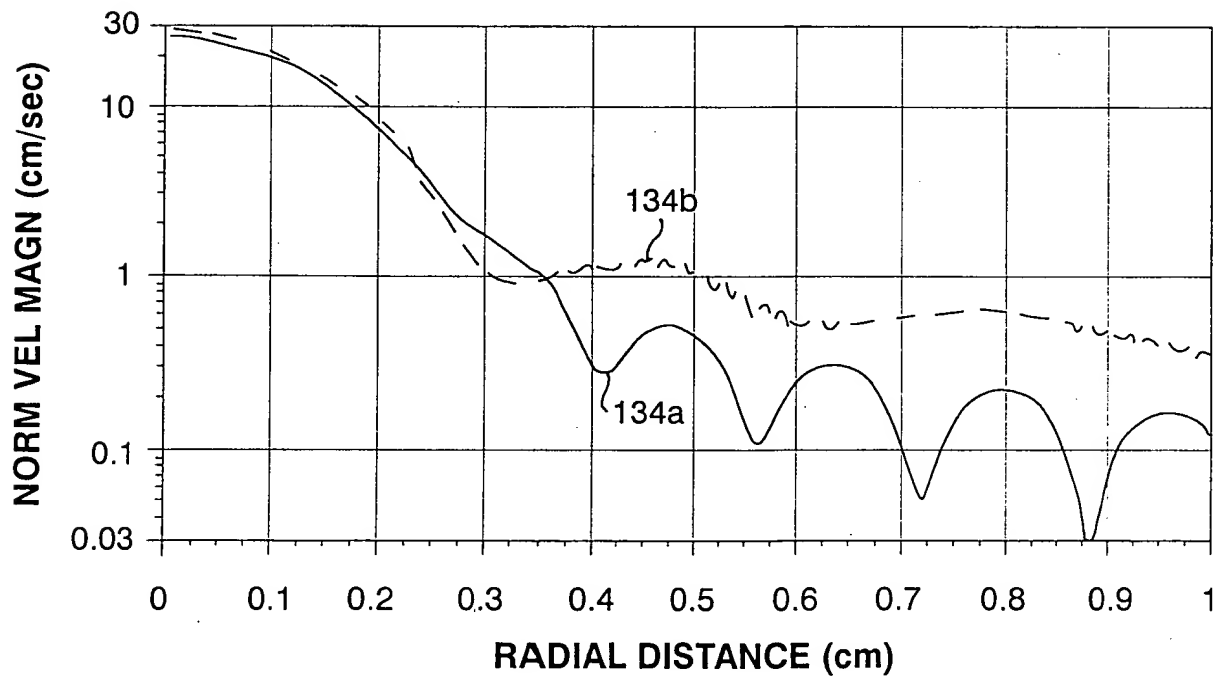


Figure 12b

“FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
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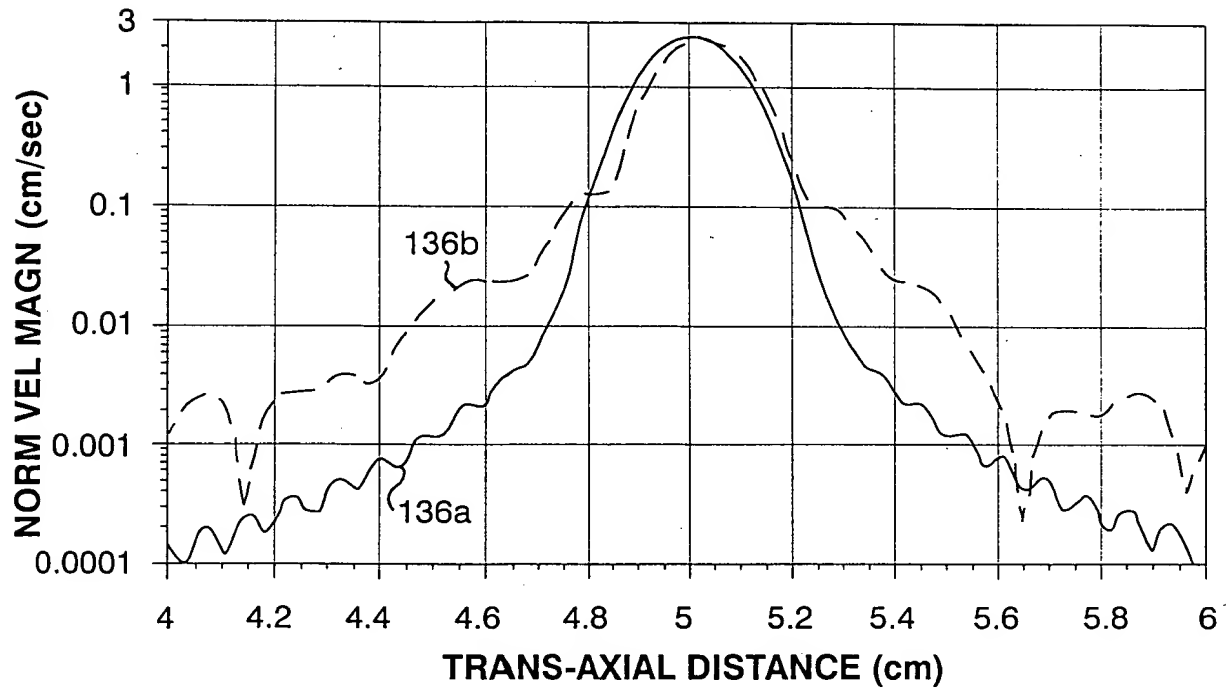


Figure 12c

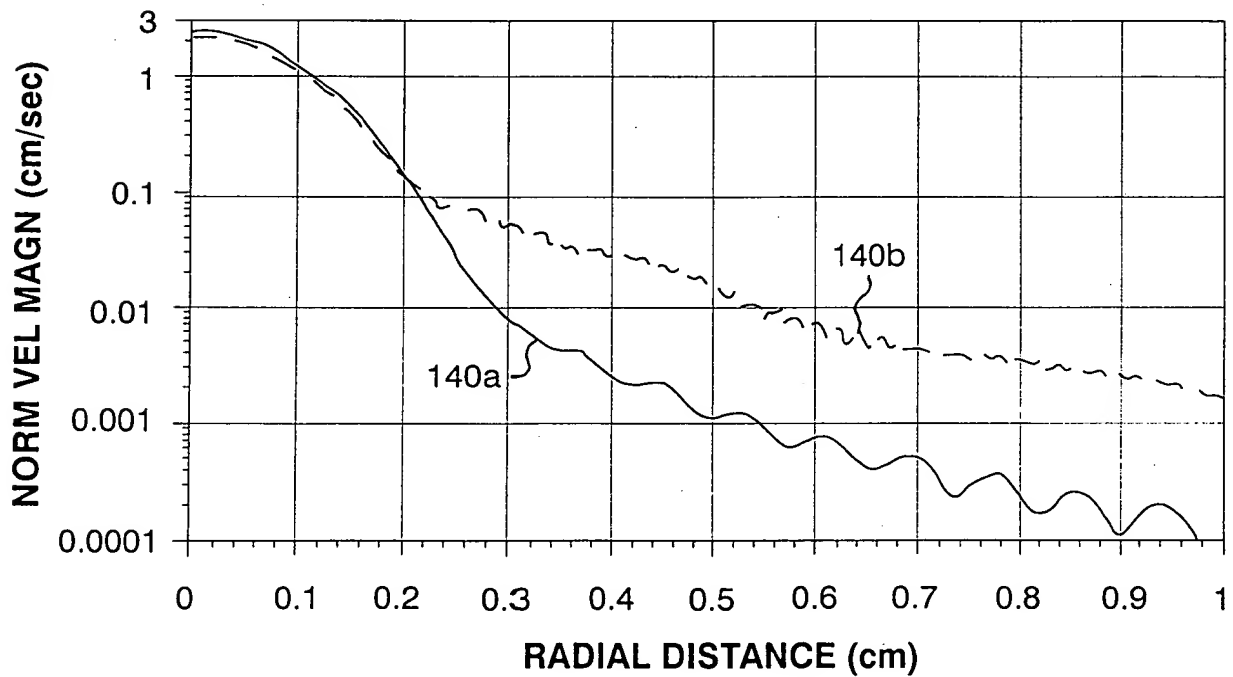
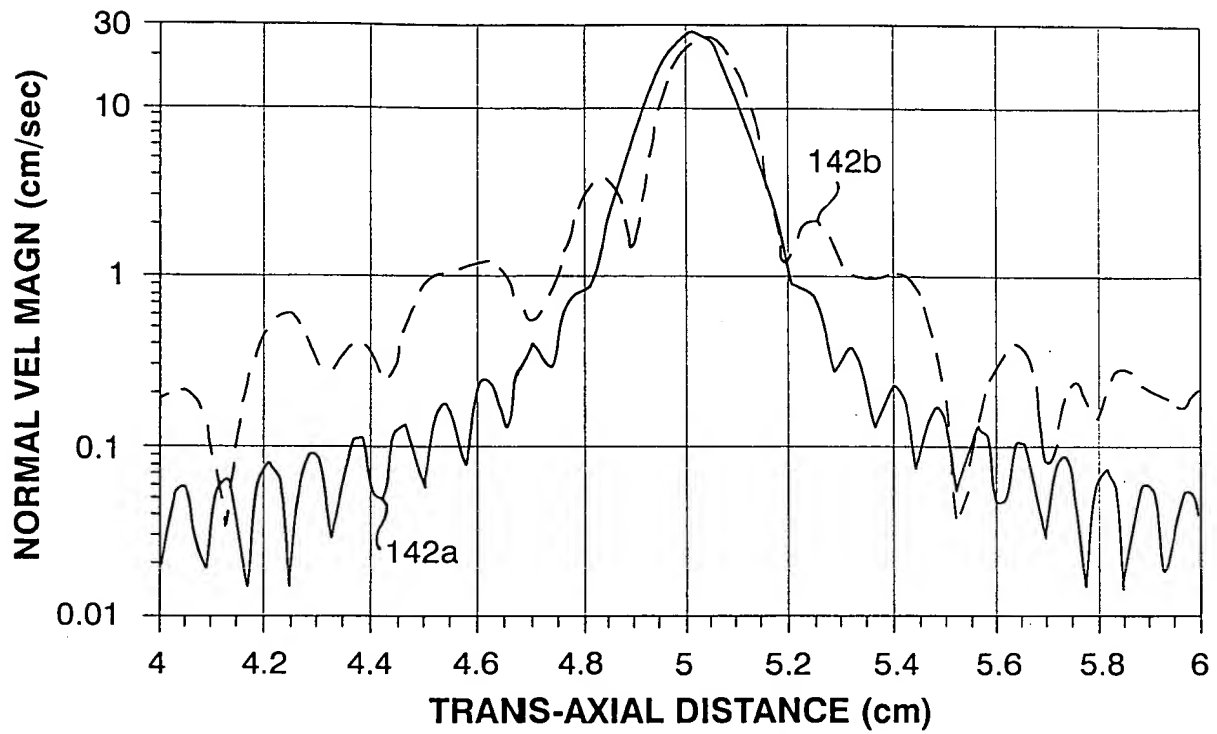


Figure 12d

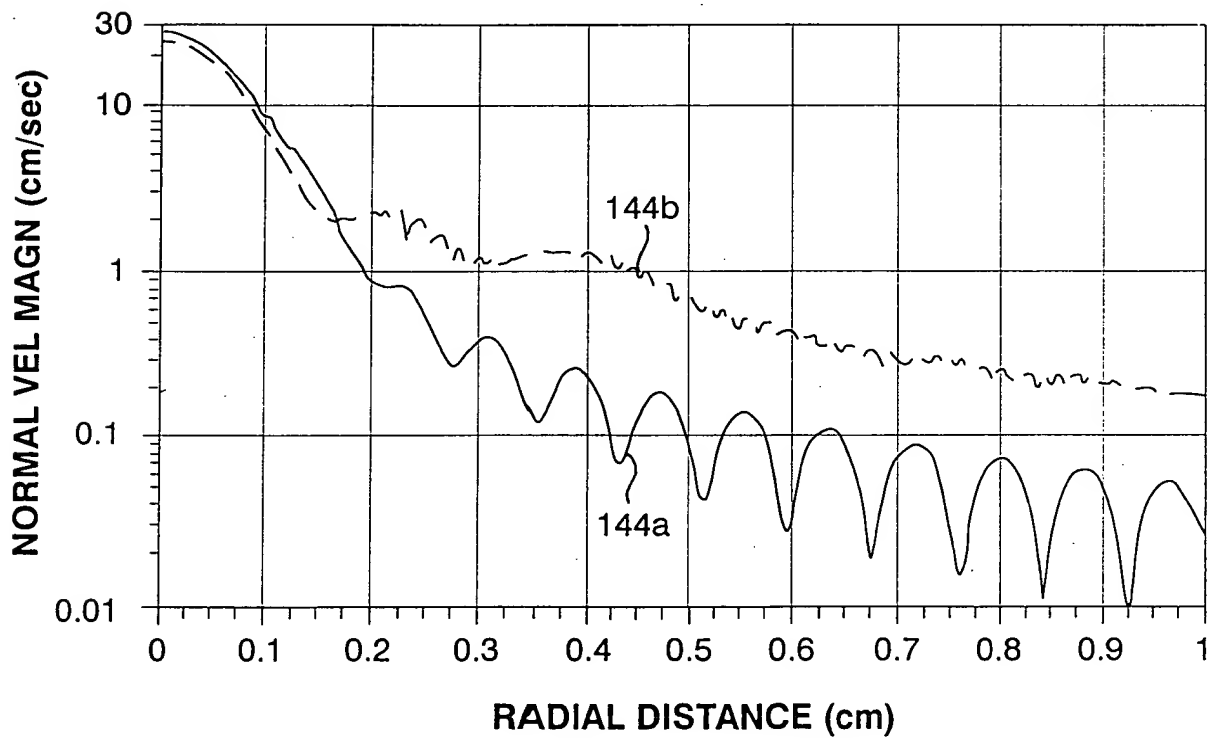
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**Figure 12e**



**Figure 12f**

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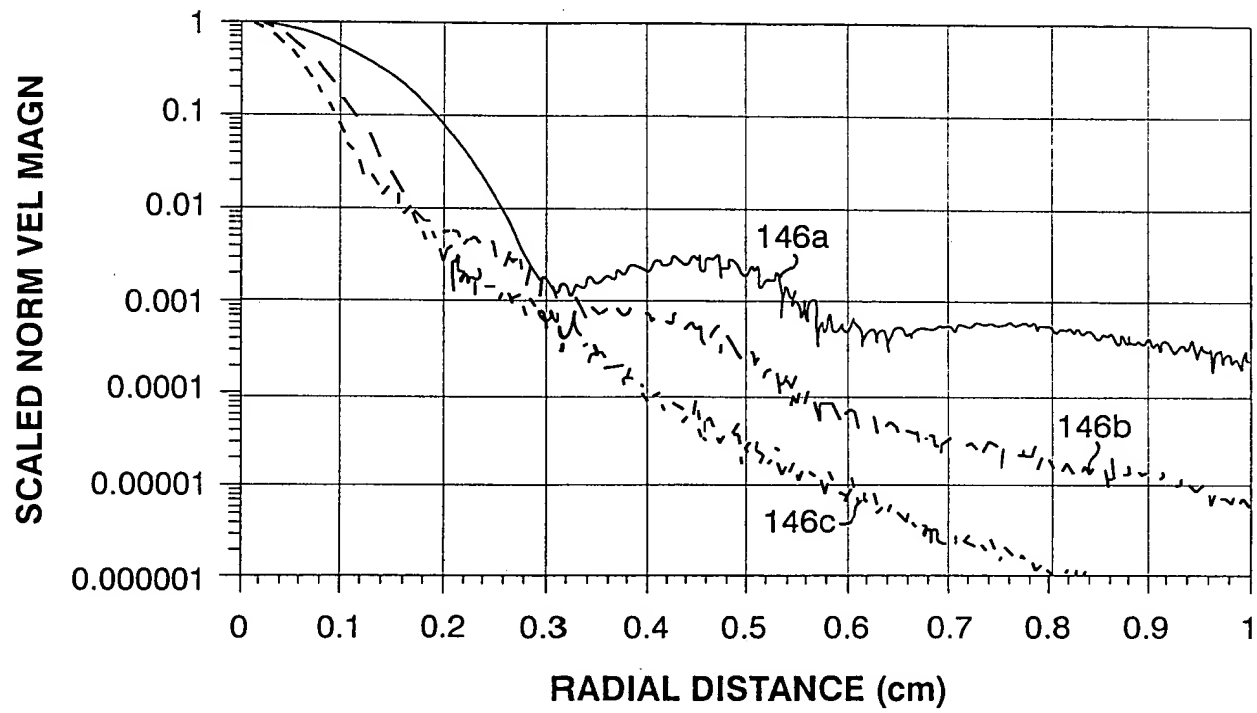


Figure 13a

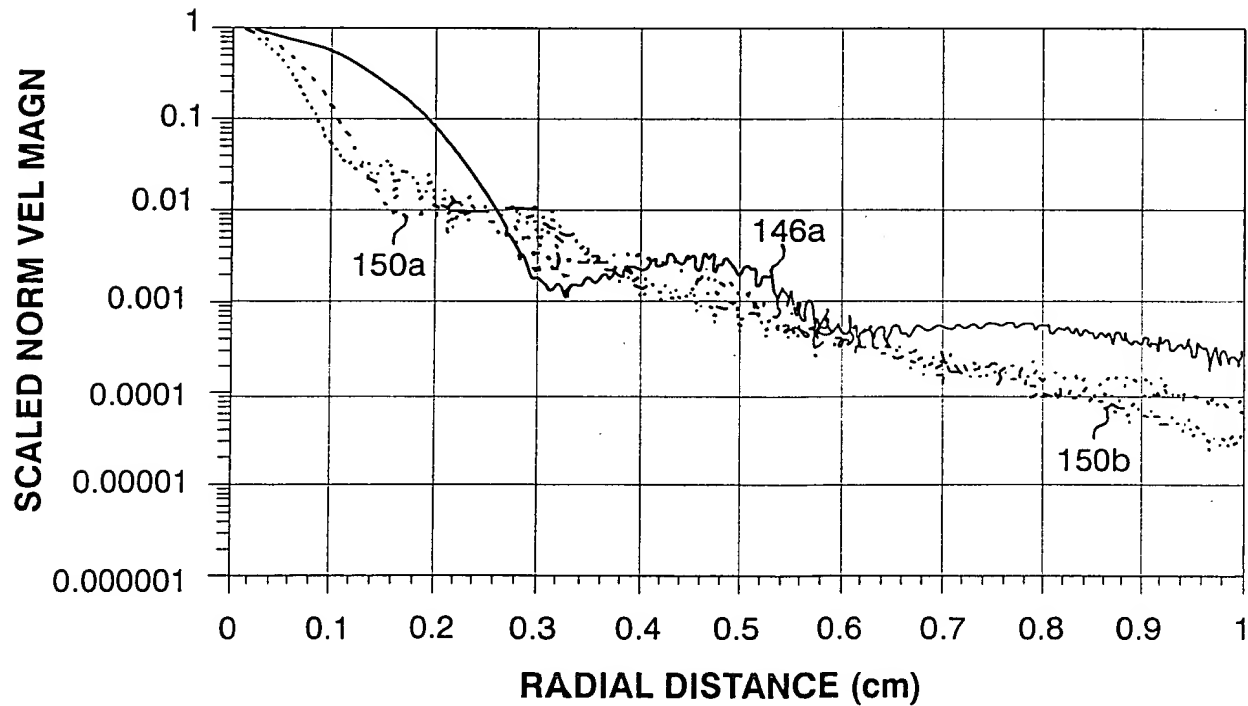


Figure 13b

“FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
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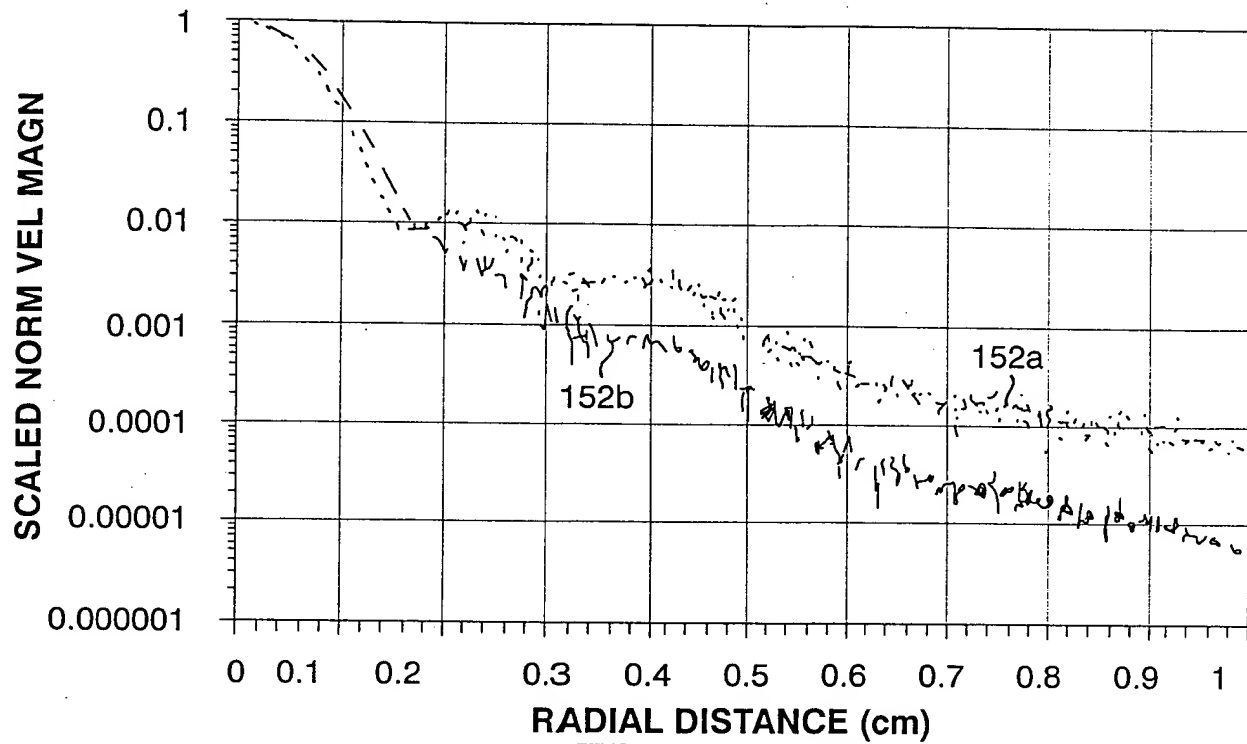


Figure 13c

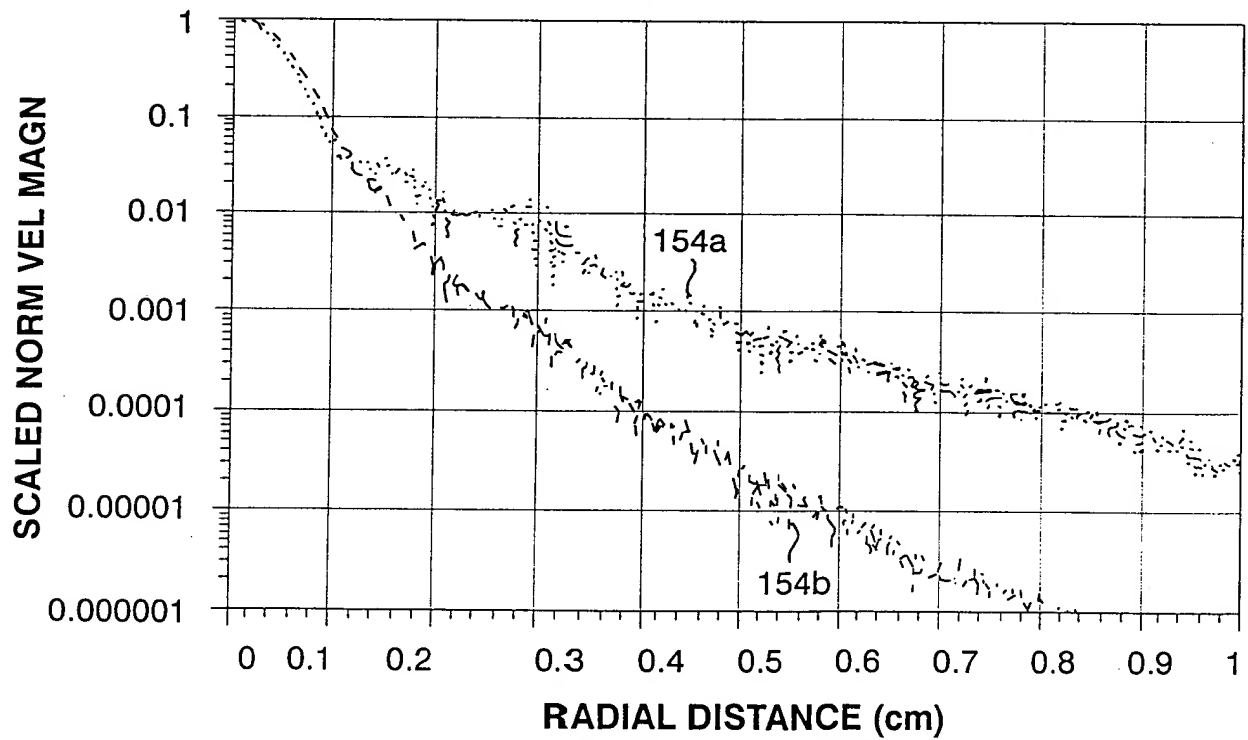
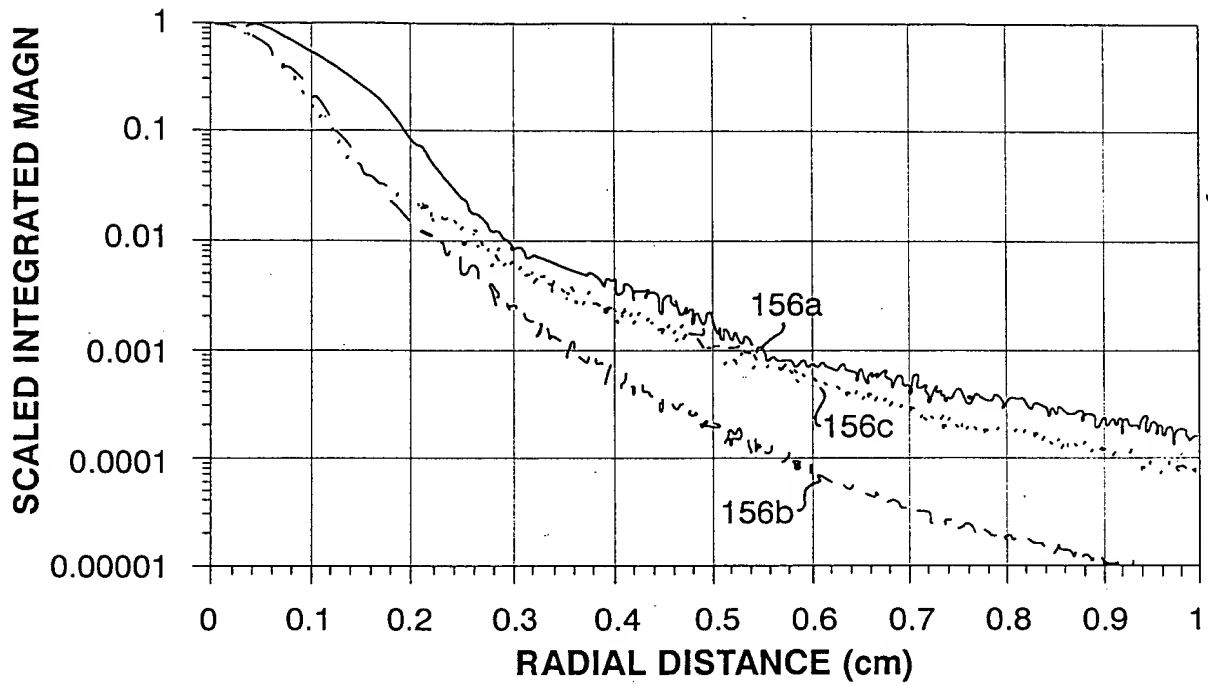


Figure 13d

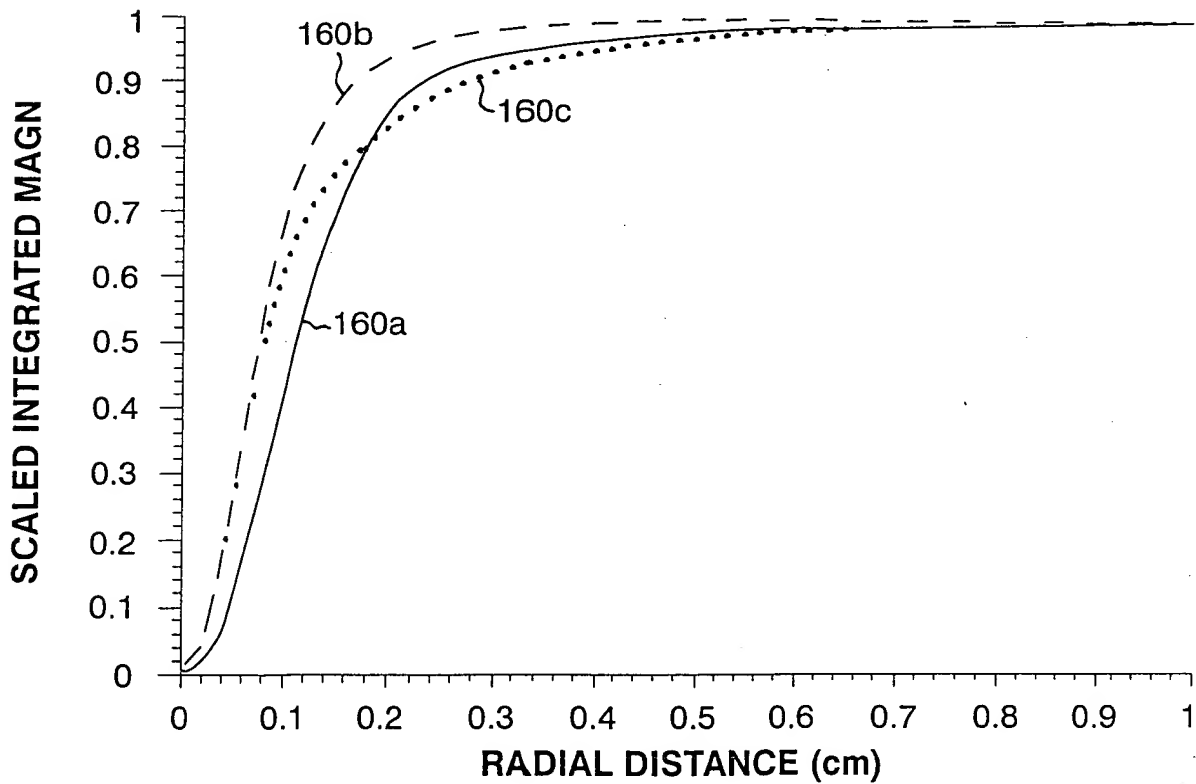
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**Figure 14a**



**Figure 14b**



“FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
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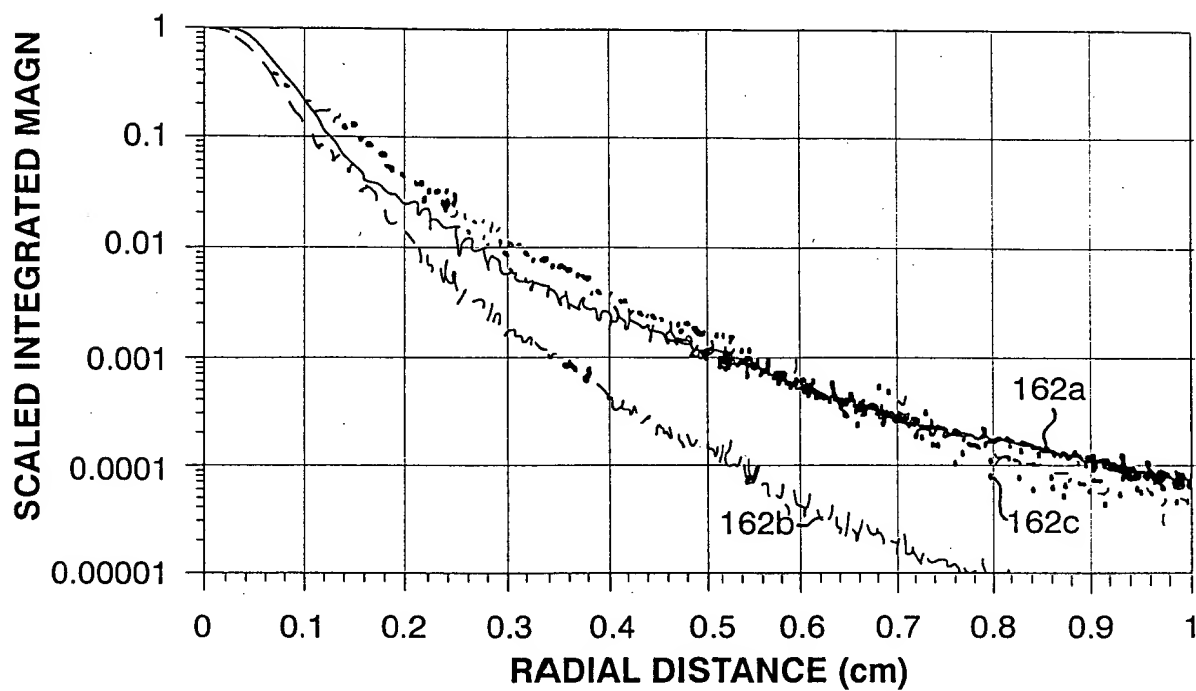


Figure 15a

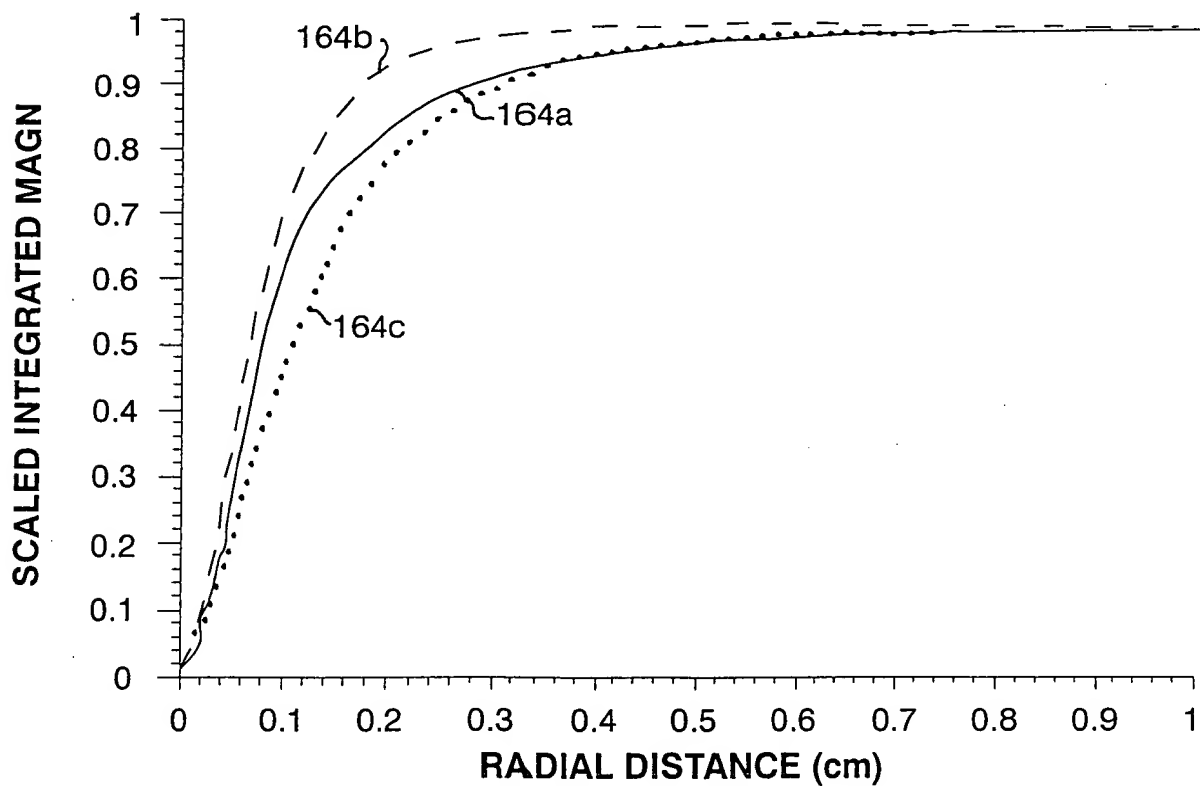


Figure 15b

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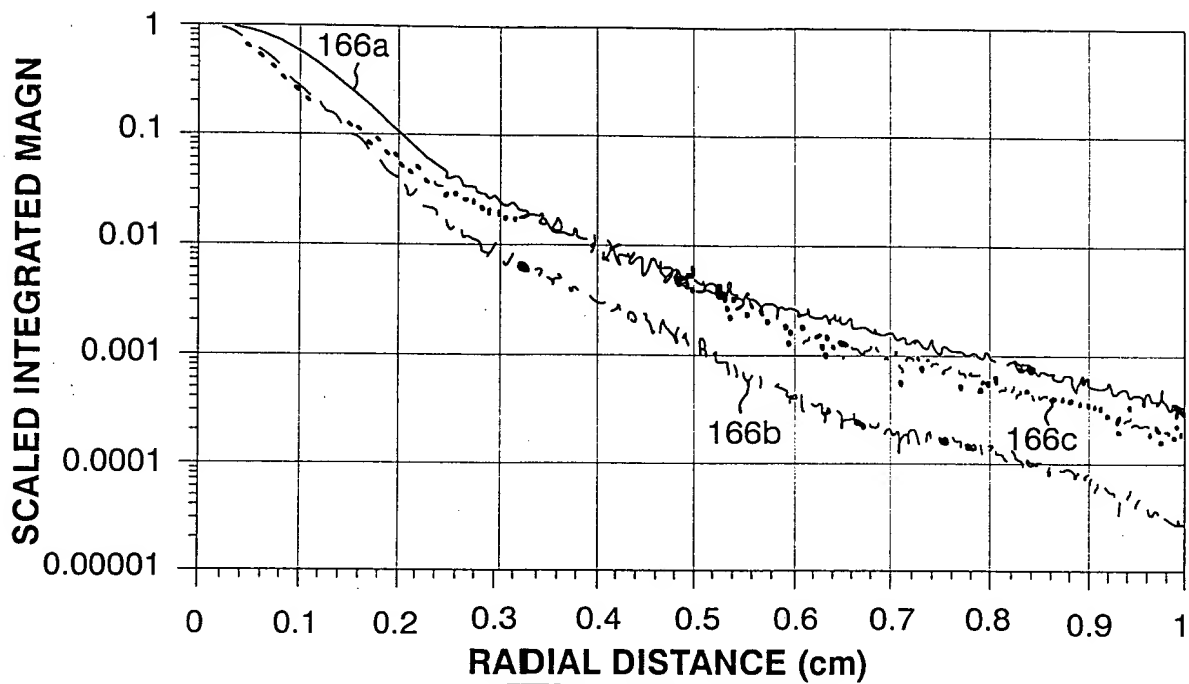


Figure 16a

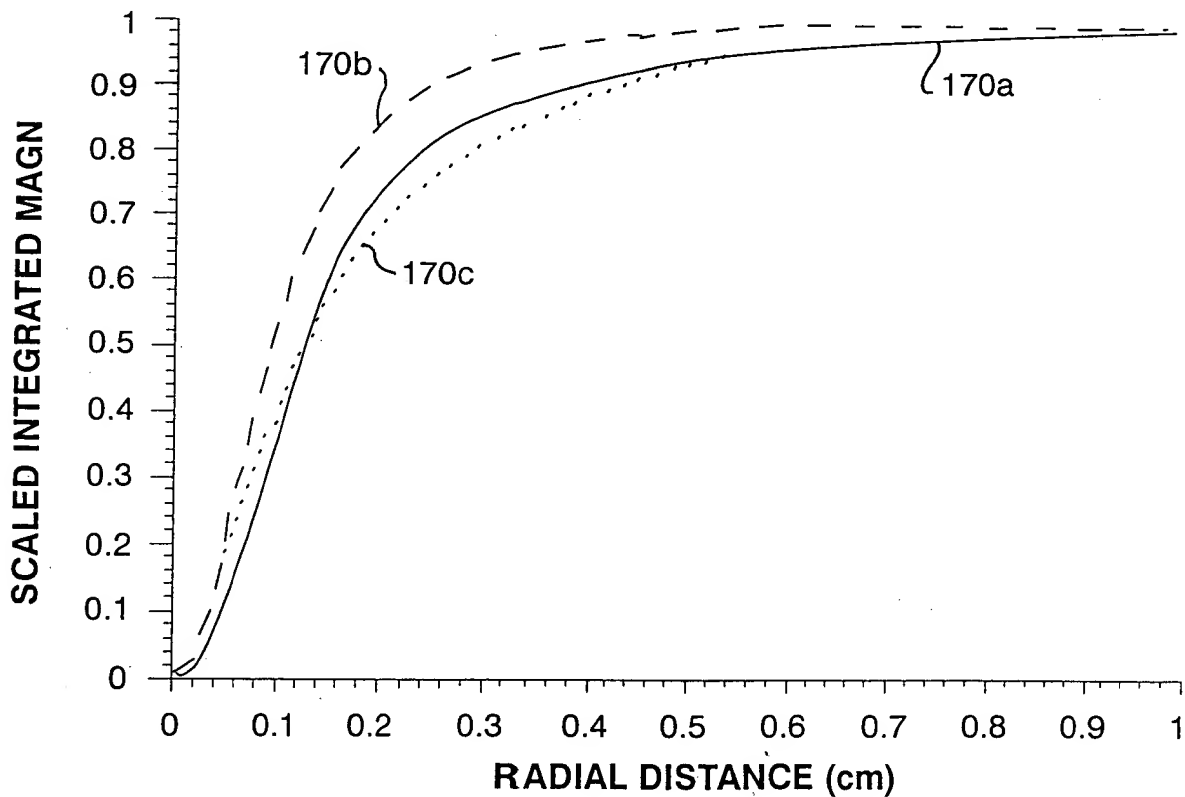


Figure 16b

**“FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
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Frequency / Medium	-20 dB full-width(cm)	0.9 Integrated full-width (cm)
2 MHz / ab wall	0.388	0.458
4 MHz / ab wall	0.242	0.542
2 <sup>nd</sup> har 4 MHz / ab wall	0.258	0.332
8 MHz / ab wall	0.304	0.602
2 <sup>nd</sup> har 8 MHz / ab wall	0.216	0.338
2 MHz / ab wall	0.406	0.746
4 MHz / ab wall	0.334	0.858
2 <sup>nd</sup> har 4 MHz / ab wall	0.308	0.504
8 MHz / ab wall	0.462	0.880
2 <sup>nd</sup> har 8 MHz / ab wall	0.298	0.526

**Figure 17**

**"FINITE AMPLITUDE DISTORTION-BASED INHOMOGENEOUS  
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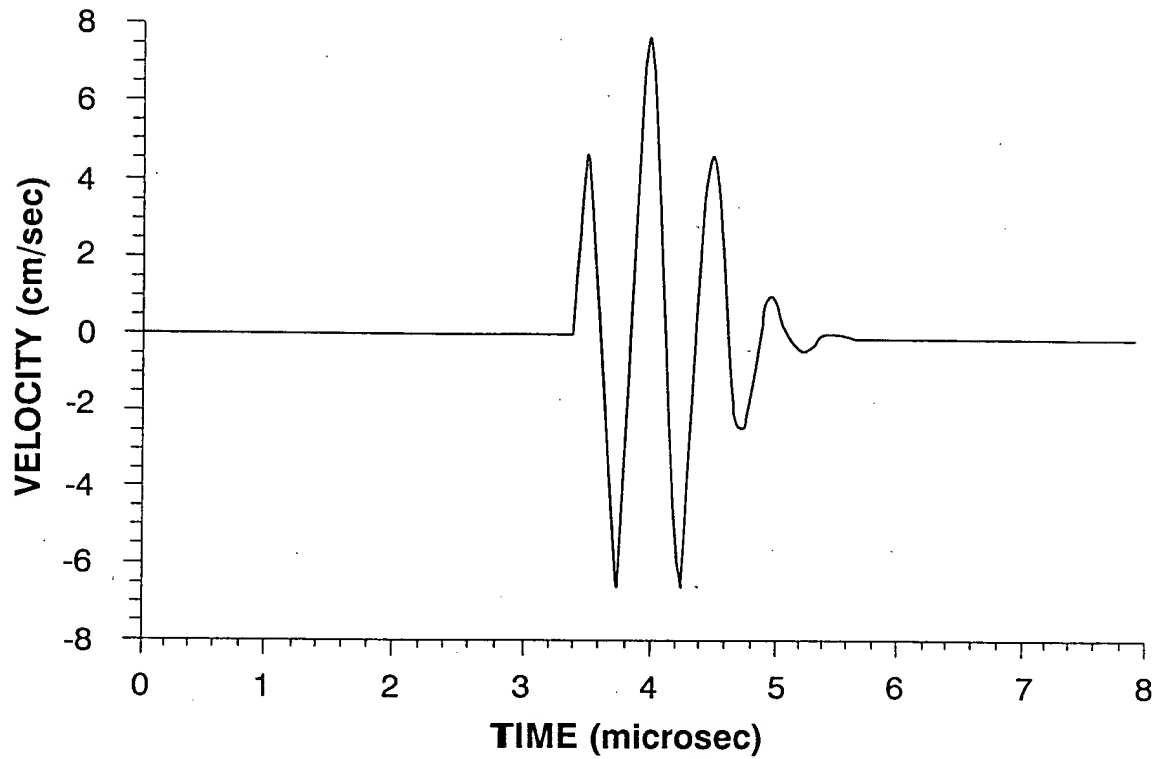


Figure 18a

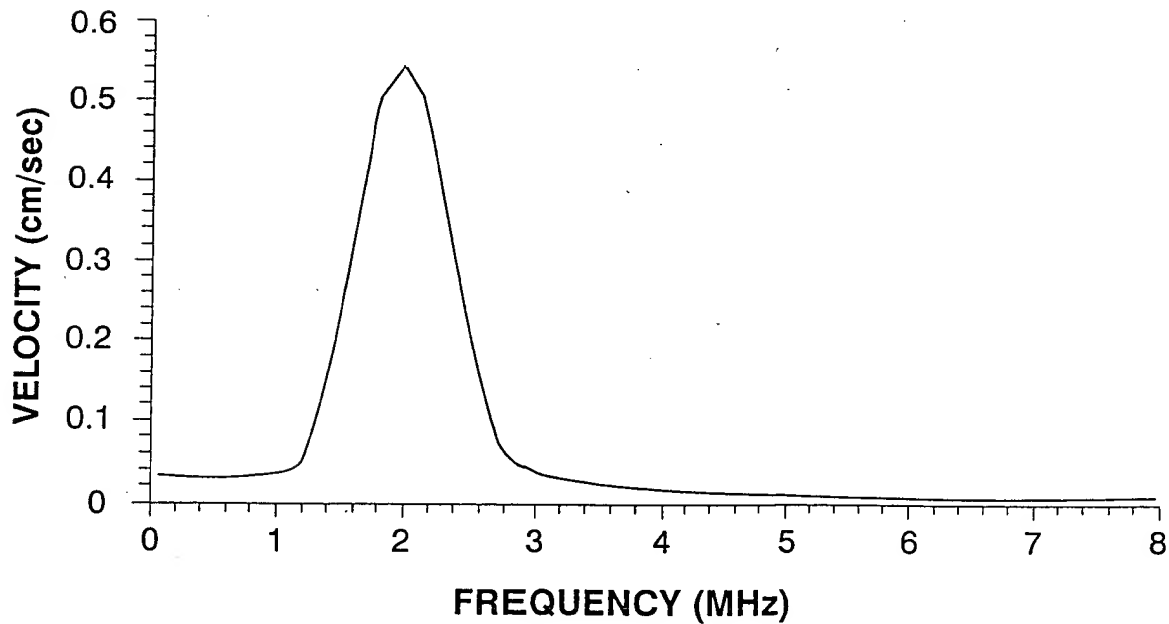
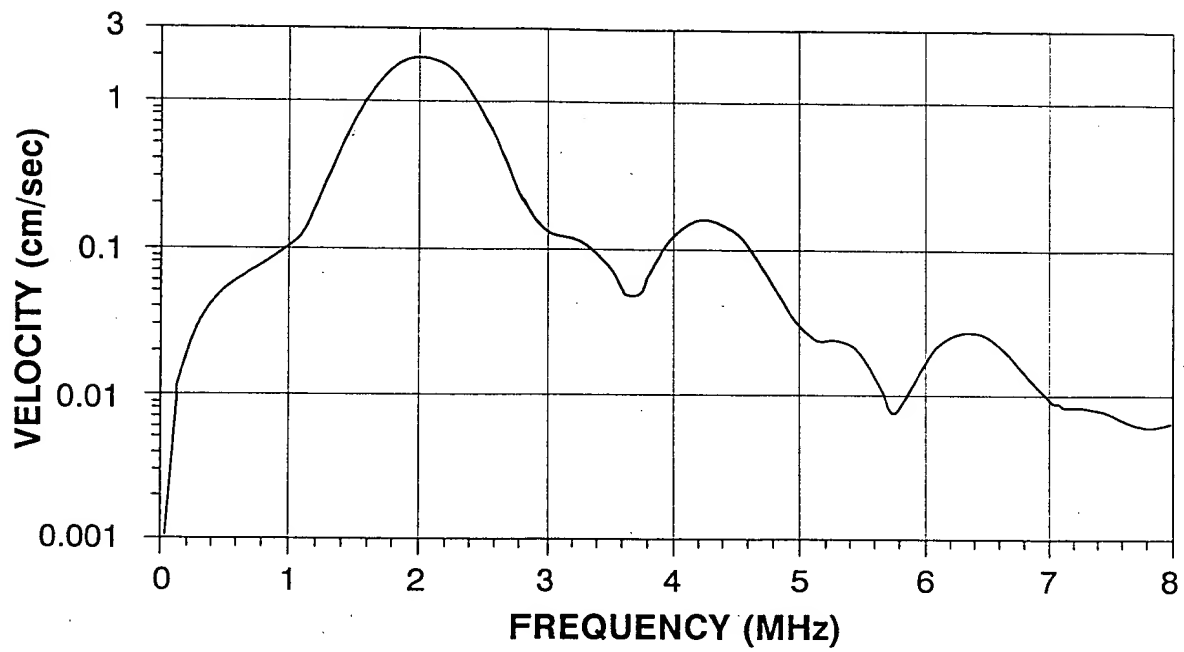


Figure 18b

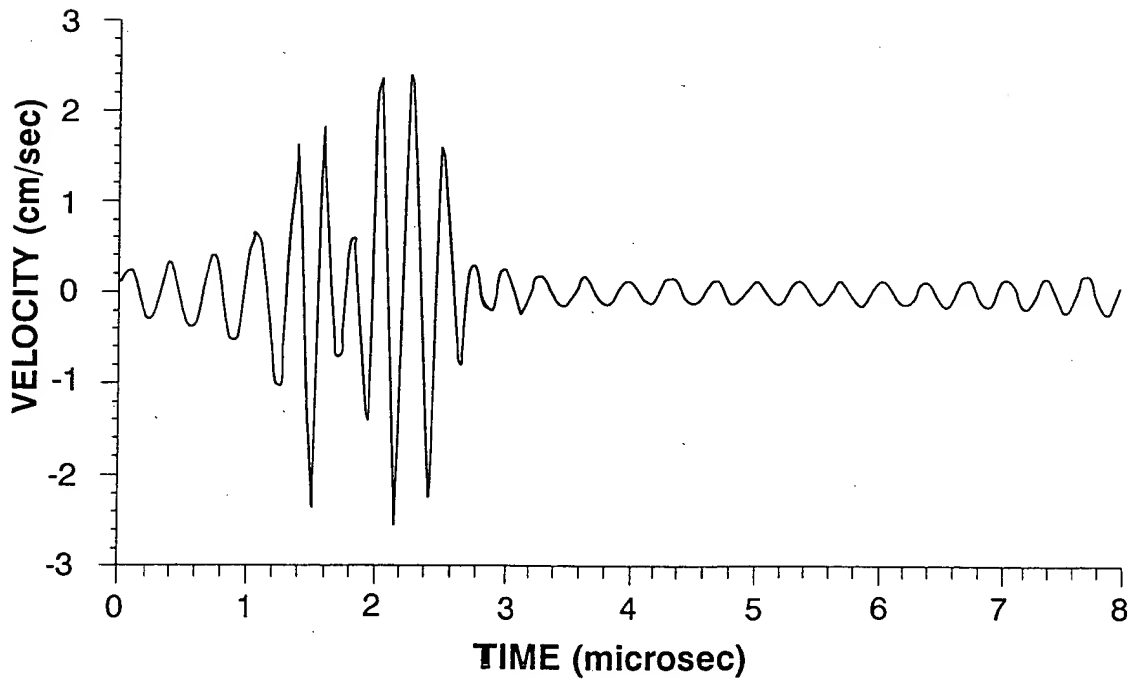
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**Figure 18c**

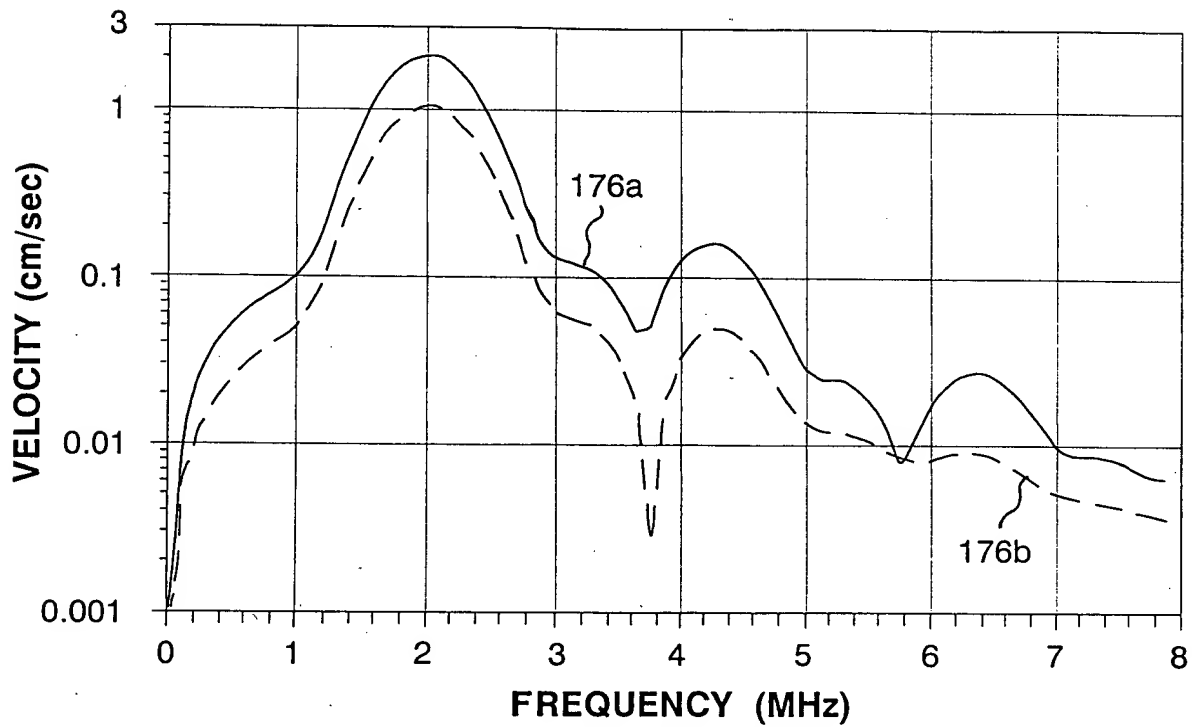


**Figure 18d**

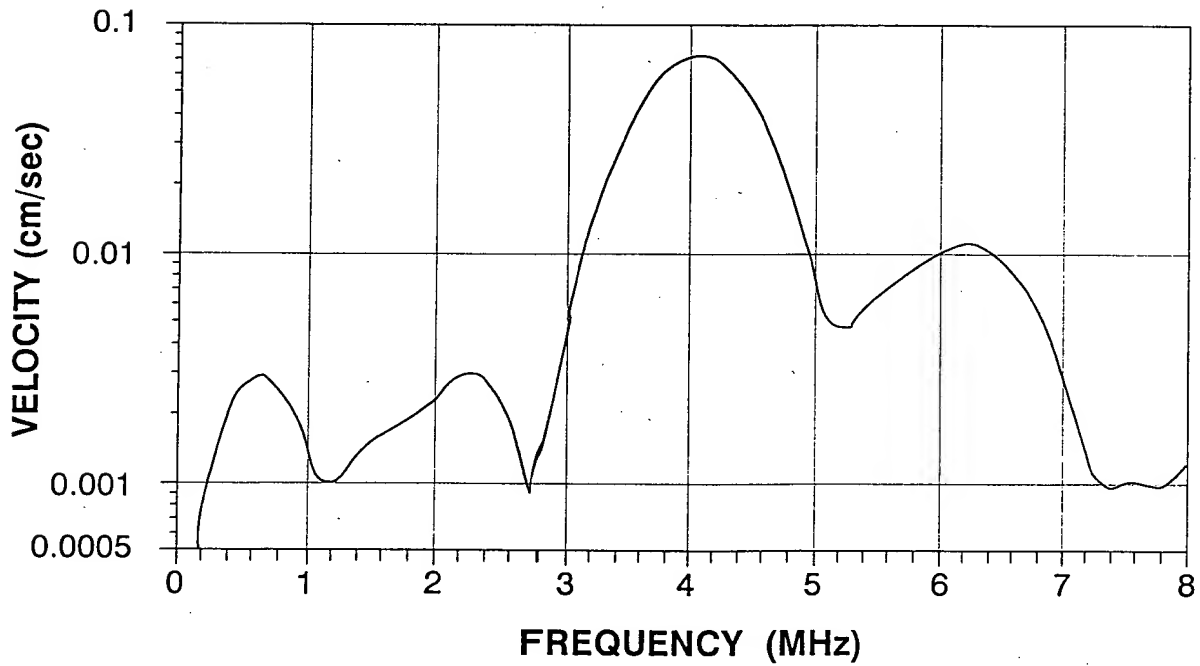
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**Figure 19a**

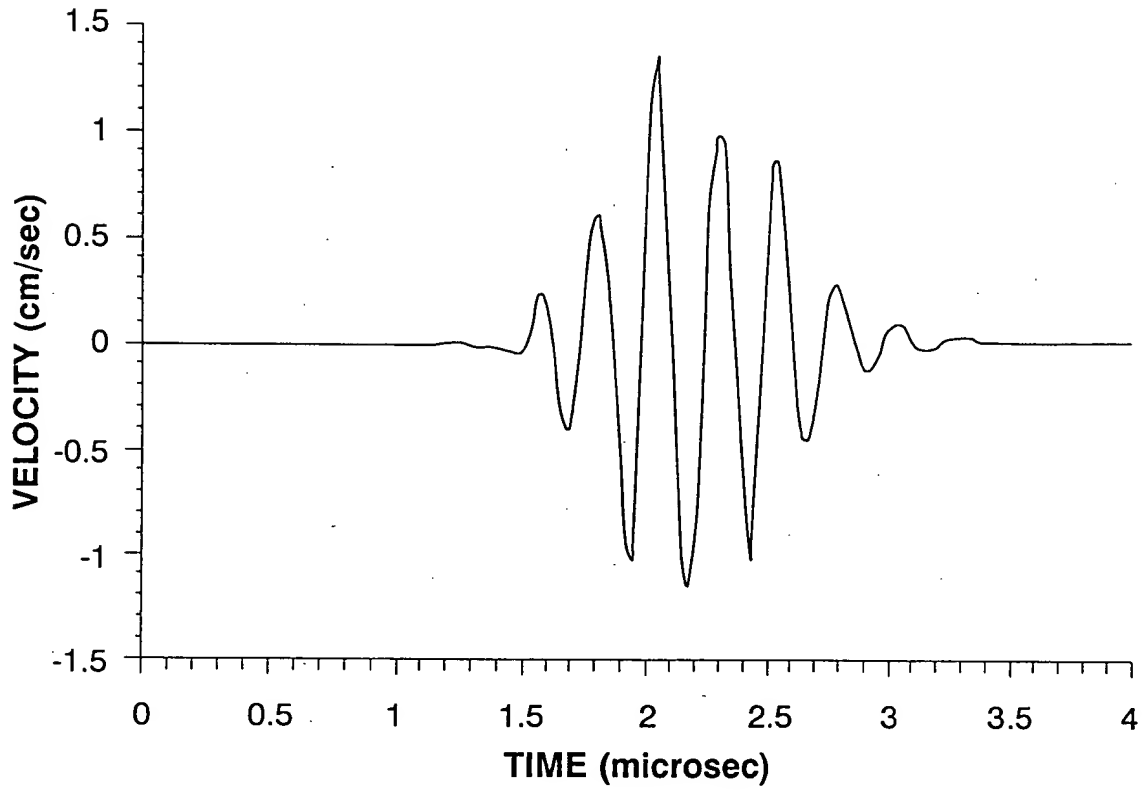


**Figure 19b**

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**Figure 19c**